Gene: COL1A1 - Sequence: NG_007400.1
Transcript: NM_000088.3 - Protein: NP_000079.2
Date : February 17, 2015

1st line: Base numbering. Full stops for intronic +/- 5, 10, 15...
2nd line: Base sequence. lower case Introns, upper case Exons
3rd line: Amino acid sequence. Printed on FIRST base of codon
4th line: Amino acid numbering. Numbered on 1st and increments of 10

Exon 1 | Start: 5001 | End: 5229 | Length: 228

```
    .     .     .     .     .     .     .     .     .     .     .     .
    agcagaggggcacccctacccactggttagcccacgccattctgaggacccagctgcacc

    .     .     .     .     .     .     .     .     .     .     .     .
    cctaccacagcacctctggcccaggctgggctggggggctggggaggcagagctgcgaag

    .     .     .     .     .     .     .     .     .     .     .     .
    aggggagatgtggggtggactcccttccctcctcctccccctctccattccaactcccaa

    .     .     .     .     .     .     .     .     .     .     .     .
    attgggggccgggccaggcagctctgattggctggggcacgggcggccggctcccctct

    .     .     .     .     .     .     .     .     .     .     .     .
    ccgaggggcagggttcctccctgctctccatcaggacagtataaaaggggcccgggccag

          |-119     |-109     |-99      |-89      |-79      |-69
    TCGTCGGAGCAGACGGGAGTTTCTCCTCGGGGTCGGAGCAGGAGGCACGCGGAGTGTGAG

          |-59      |-49      |-39      |-29      |-19      |-9
    GCCACGCATGAGCGGACGCTAACCCCCTCCCCAGCCACAAAGAGTCTACATGTCTAGGGT

          |1        |11       |21       |31       |41       |51
    CTAGACATGTTCAGCTTTGTGGACCTCCGGCTCCTGCTCCTCTTAGCGGCCACCGCCCTC
          M   F   S   F   V   D   L   R   L   L   L   L   A   A   T   A   L
          |1                            |11

          |61       |71       |81       |91       |101    .     .
    CTGACGCACGGCCAAGAGGAAGGCCAAGTCGAGGGCCAAGACGAAGACAgtaagtcccaa
    L   T   H   G   Q   E   E   G   Q   V   E   G   Q   D   E   D   I
          |21                           |31
```

1

```
       .         .         .         .         .         .         .         .         .         .         .         .
acttttgggagtgcaaggatactctatatcgcgccttgcgcttggtcccggggggccgcgg


       .         .         .         .         .         .         .         .         .         .         .         .
cttaaaacgagacgtggatgatccggagactcgggaatggaagggagatgatgagggctc


       .         .         .         .         .         .         .         .         .         .         .         .
ttcctcggcgccctgagacaggagggagctcaccctggggcgaggttggggttgaacgcg


       .         .         .         .         .         .         .         .         .         .         .         .
ccccgggagcgggaggtgagggtggagcgcggcgtgagttggtgcaagagagaatcccga


       .         .         .         .         .         .         .         .         .         .         .         .
gcgcgcaaccgggggaagtggggatctgggtgcagagtgaggaaagcacg




Exon 2 | Start: 6693 | End: 6887 | Length: 194
BE AWARE: This section overlaps with the following exon




       .         .         .         .         .         .         .         .         .         .         .         .
tttttatttcacttggcttcagcgccaatgggctgaggttggagttggaagccaccgcgg


       .         .         .         .         .         .         .         .         .         .         .         .
actaaagctttgtttaaattcctgagaactggaaagagttacagcctccctggccaggcg


       .         .         .         .         .         .         .         .         .         .         .         .
cctcggcgctgtcacccgcgctgatgaggagcaggcgagcttttaaggatttgaggaaag


       .         .         .         .         .         .         .         .         .         .         .         .
aagaac ggggggagggg cgggaagt gaaaaat ccaagtgtgcctcttagacccgggggaa


       .         .         .         .         .         .         .         .         .         .         .         .
aggtggttaagctgggggttgcagtcactactgacaacgcccctcttccgcctgtcccag

        |111       |121       |131       |141       |151       |161
TCCCACCAATCACCTGCGTACAGAACGGCCTCAGGTACCATGACCGAGACGTGTGGAAAC
  P   P   I   T   C   V   Q   N   G   L   R   Y   H   D   R   D   V   W   K   P
                  |41                                      |51

        |171       |181       |191       |201       |211       |221
CCGAGCCCTGCCGGATCTGCGTCTGCGACAACGGCAAGGTGTTGTGCGATGACGTGATCT
  E   P   C   R   I   C   V   C   D   N   G   K   V   L   C   D   D   V   I   C
                  |61                                      |71
```

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        |231        |241       |251       |261       |271       |281
GTGACGAGACCAAGAACTGCCCCGGCGCCGAAGTCCCCGAGGGCGAGTGCTGTCCCGTCT
  D   E   T   K   N   C   P   G   A   E   V   P   E   G   E   C   C   P   V   C
                    |81                                      |91


        |291        .    .    .    .    .    .    .    .    .    .
GCCCCGACGGCTCAGgtgcggctgcgctcggggcctggggcctggggcctggggcctggg
  P   D   G   S   E



        .    .    .    .    .    .    .    .    .    .    .    .
gcctggggctggggctgggggtggtcggcgctcgctggccctccgtgctggaggcctctg


        .    .    .    .    .    .    .    .    .    .    .    .
ccgacgggagcagcattagcaaaccttggctctaacgcgcgtctcttcgtcccctagagt


        .    .    .    .    .    .    .    .    .    .    .    .
cacccaccgaccaagaaaccaccggcgtcgaggtaatctcctgccctcgaattttgcccc


        .    .    .    .    .    .    .    .    .    .    .    .
tgcgcggcccgtgactcctcacagtcctcccttctctaacctggcctcttgtttcttctc


        .    .    .
ccccaatcccacagg




Exon 3 | Start: 7050 | End: 7084 | Length: 34
BE AWARE: This section overlaps with the following exon



        .    .    .    .    .    .    .    .    .    .    .    .
aacccgagccctgccggatctgcgtctgcgacaacggcaaggtgttgtgcgatgacgtga


        .    .    .    .    .    .    .    .    .    .    .    .
tctgtgacgagaccaagaactgccccggcgccgaagtccccgagggcgagtgctgtcccg


        .    .    .    .    .    .    .    .    .    .    .    .
tctgccccgacggctcaggtgcggctgcgctcggggcctggggcctggggcctggggcct


        .    .    .    .    .    .    .    .    .    .    .    .
ggggcctggggctggggctgggggtggtcggcgctcgctggccctccgtgctggaggcct


        .    .    .    .    .    .    .    .    .    .    .    .
```

```
ctgccgacgggagcagcattagcaaaccttggctctaacgcgcgtctcttcgtcccctag

   |301       |311       |321       |331    .    .    .    .    .
AGTCACCCACCGACCAAGAAACCACCGGCGTCGAGgtaatctcctgccctcgaattttgc
  S   P   T   D   Q   E   T   T   G   V   E
  |101                              |111


       .    .    .    .    .    .    .    .    .    .    .    .
ccctgcgcggcccgtgactcctcacagtcctcccttctctaacctggcctcttgtttctt

       .    .    .    .    .    .    .    .    .    .    .    .
ctcccccaatcccacagggacccaagggagacactggcccccgaggcccaagggtaagcg

       .    .    .    .    .    .    .    .    .    .    .    .
ttgcactctgggctgtgggggctgcaggtgggcatggctctcggccccacgctcacccc

       .    .    .    .    .    .    .    .    .    .    .    .
ggccccgccctctccccctgcagggacccgcaggcccccctggccgagatggcatccctg

       .    .    .    .    .    .    .
gacagcctggacttcccggaccccccggacccccc



Exon 4 | Start: 7187 | End: 7222 | Length: 35
BE AWARE: This section overlaps with the following exon



  .    .    .    .    .    .    .    .    .    .    .    .    .
ggtgcggctgcgctcggggcctggggcctggggcctggggcctggggcctggggctgggg

  .    .    .    .    .    .    .    .    .    .    .    .
ctgggggtggtcggcgctcgctggccctccgtgctggaggcctctgccgacgggagcagc

  .    .    .    .    .    .    .    .    .    .    .    .
attagcaaaccttggctctaacgcgcgtctcttcgtcccctagagtcacccaccgaccaa

  .    .    .    .    .    .    .    .    .    .    .    .
gaaaccaccggcgtcgaggtaatctcctgccctcgaattttgcccctgcgcggcccgtga

  .    .    .    .    .    .    .    .    .    .    .    .
ctcctcacagtcctcccttctctaacctggcctcttgtttcttctcccccaatcccacag

      |341       |351       |361    .    .    .    .
GGACCCAAGGGAGACACTGGCCCCCGAGGCCCAAGGgtaagcgttgcactctgggctgtg
```

```
G  P  K  G  D  T  G  P  R  G  P  R
                              |121


   .     .     .     .     .     .     .     .     .     .     .     .
gggggctgcaggtgggcatggctctcggccccacgctcaccccggccccgccctctcccc

   .     .     .     .     .     .     .     .     .     .     .     .
ctgcagggacccgcaggcccccctggccgagatggcatccctggacagcctggacttccc

   .     .     .     .     .     .     .     .     .     .     .     .
ggacccccggacccccggacctcccggacccccctggcctcggaggagtaagtggagag

   .     .     .     .     .     .     .     .     .     .     .     .
gccttgtgtgtccactctcccctgttttgttttttgtttttttggcagatgacataatttta

   .     .     .     .     .     .     .     .
tactttgaaataatttcaaacttacagaaaagttgc



Exon 5 | Start: 7313 | End: 7414 | Length: 101



   .     .     .     .     .     .     .     .     .     .     .     .
aaaccttggctctaacgcgcgtctcttcgtcccctagagtcacccaccgaccaagaaacc

   .     .     .     .     .     .     .     .     .     .     .     .
accggcgtcgaggtaatctcctgccctcgaattttgcccctgcgcggcccgtgactcctc

   .     .     .     .     .     .     .     .     .     .     .     .
acagtcctcccttctctaacctggcctcttgtttcttctcccccaatcccacagggaccc

   .     .     .     .     .     .     .     .     .     .     .     .
aagggagacactggcccccgaggcccaagggtaagcgttgcactctgggctgtgggggggc

   .     .     .     .     .     .     .     .     .     .     .     .
tgcaggtgggcatggctctcggccccacgctcaccccggccccgccctctcccctgcag

 |371      |381      |391      |401      |411      |421
GGACCCGCAGGCCCCCCTGGCCGAGATGGCATCCCTGGACAGCCTGGACTTCCCGGACCC
G  P  A  G  P  P  G  R  D  G  I  P  G  Q  P  G  L  P  G  P
                              |131                          |141

 |431      |441      |451      |461      |471  .     .     .
CCCGGACCCCCCGGACCTCCCGGACCCCCTGGCCTCGGAGGAgtaagtggagaggccttg
```

```
P   G   P   P   G   P   P   G   P   P   G   L   G   G
                        |151


    .       .       .       .       .       .       .       .       .       .       .       .
tgtgtccactctcccctgttttgtttttgttttttggcagatgacataattttatacttt


    .       .       .       .       .       .       .       .       .       .       .       .
gaaataatttcaaacttacagaaaagttgcaagaatcctacaggaaactctcacataccc


    .       .       .       .       .       .       .       .       .       .       .       .
ttcacagtttgtgacatgtgctttattagtctctgtttatgtatatgtatcttttttttt


    .       .       .       .       .       .       .       .       .       .       .       .
ctgaactgtttgagcaagttgctaacatcaggctcttttgcgcctaaatacttaggtgtg


    .       .       .       .       .       .       .       .       .
tttttcctaaaaacaagagcattctcttaactgacctacaca



Exon 6 | Start: 8136 | End: 8207 | Length: 71
BE AWARE: This section overlaps with the following exon



    .       .       .       .       .       .       .       .       .       .       .       .
tgcgtttaatcatcatgtctctagtttccacaaatgtagaacgttcctcagactttcttt


    .       .       .       .       .       .       .       .       .       .       .       .
gtctttagtggcactgggagttttgatgagtccagttgttttgcagactgtccctcaatt


    .       .       .       .       .       .       .       .       .       .       .       .
tgggattgtctcattagattagatgcagggatgcatctttgcaggaatgtcttaaaagca


    .       .       .       .       .       .       .       .       .       .       .       .
atgttattcttctcagcacatcacaccaggaagtgcatgatgtcagtttcttccatcctc


    .       .       .       .       .       .       .       .       .       .       .       .
agtgccgtcttctgcctttcaattcactgtcctcactctgacttctcttgtttgttctag

        |481         |491         |501         |511         |521         |531
AACTTTGCTCCCCAGCTGTCTTATGGCTATGATGAGAAATCAACCGGAGGAATTTCCGTG
N   F   A   P   Q   L   S   Y   G   Y   D   E   K   S   T   G   G   I   S   V
        |161                                     |171


        |541     .       .       .       .       .       .       .       .
```

6

```
CCTGGCCCCATGgtgagccagcaggggggagcatggatgacagaagagagaatgggtatcc
P  G  P  M
          |181


   .     .     .     .     .     .     .     .     .     .     .     .
agaggaggtgggcataggcggctggtatagacagcttgggaggtccagatcacctttggg

   .     .     .     .     .     .     .     .     .     .     .     .
acctcagagtccagaaaggatgcaggacgactgggtggtcccaacaggcatgaatgacta

   .     .     .     .     .     .     .     .     .     .     .     .
catccacatgctttcctacagagggatcaccatgaccccccctttcttctccctctatagg

   .     .     .     .     .     .     .     .     .     .     .     .
gtccctctggtcctcgtggtctccctggcccccctggtgcacctgtgagtatccaggacg

   .     .     .
tcttcatatgcc




Exon 7 | Start: 8435 | End: 8479 | Length: 44
BE AWARE: This section overlaps with the following exon



   .     .     .     .     .     .     .     .     .     .     .     .
gaactttgctccccagctgtcttatggctatgatgagaaatcaaccggaggaatttccgt

   .     .     .     .     .     .     .     .     .     .     .     .
gcctggccccatggtgagccagcaggggggagcatggatgacagaagagagaatgggtatc

   .     .     .     .     .     .     .     .     .     .     .     .
cagaggaggtgggcataggcggctggtatagacagcttgggaggtccagatcacctttgg

   .     .     .     .     .     .     .     .     .     .     .     .
gacctcagagtccagaaaggatgcaggacgactgggtggtcccaacaggcatgaatgact

   .     .     .     .     .     .     .     .     .     .     .     .
acatccacatgctttcctacagagggatcaccatgaccccccctttcttctccctctatag

       |551        |561        |571        |581        .     .     .
GGTCCCTCTGGTCCTCGTGGTCTCCCTGGCCCCCCTGGTGCACCTgtgagtatccaggac
G  P  S  G  P  R  G  L  P  G  P  P  G  A  P
                             |191
```

7

```
        .         .         .         .         .         .         .         .         .         .
gtcttcatatgcctccttgggctttggtcttttggagggaagactgggatgagggcagga

        .         .         .         .         .         .         .         .         .         .
gagatgctcagagatctcttggtaagattggagaaggttgacagggacttgtcttctaac

        .         .         .         .         .         .         .         .         .         .
ccatctttttccttcttctcaagggtccccaaggcttccaaggtccccctggtgagcctg

        .         .         .         .         .         .         .         .         .         .
gcgagcctggagcttcagtaagcactctctatacagattcatactccttctacaaacaca

        .         .         .         .         .         .         .         .         .         .
cagactctcctatagaagaactcccaggcctggggtcttccttac


Exon 8 | Start: 8638 | End: 8691 | Length: 53
BE AWARE: This section overlaps with the following exon


        .         .         .         .         .         .         .         .         .         .
caggacgactgggtggtcccaacaggcatgaatgactacatccacatgctttcctacaga

        .         .         .         .         .         .         .         .         .         .
gggatcaccatgaccccctttcttctccctctatagggtccctctggtcctcgtggtct

        .         .         .         .         .         .         .         .         .         .
ccctggcccccctggtgcacctgtgagtatccaggacgtcttcatatgcctccttgggct

        .         .         .         .         .         .         .         .         .         .
ttggtcttttggagggaagactgggatgagggcaggagagatgctcagagatctcttggt

        .         .         .         .         .         .         .         .         .         .
aagattggagaaggttgacagggacttgtcttctaacccatctttttccttcttctcaag

  |591       |601       |611       |621       |631       |641      .
GGTCCCCAAGGCTTCCAAGGTCCCCCTGGTGAGCCTGGCGAGCCTGGAGCTTCAgtaagc
G  P  Q  G  F  Q  G  P  P  G  E  P  G  E  P  G  A  S
             |201                           |211

        .         .         .         .         .         .         .         .         .         .
actctctatacagattcatactccttctacaaacacacagactctcctatagaagaactc

        .         .         .         .         .         .         .         .         .         .
```

```
ccaggcctggggtcttccttacctcttcccttcaatcccagccttccccttctttttttc

        .       .       .       .       .       .       .       .       .       .       .       .
ttatccatattctaaccacctcttctatctttttctagggtcccatgggtccccgaggtcc

        .       .       .       .       .       .       .       .       .       .       .       .
cccaggtccccctggaaagaatggagatgatgtaagtatccccagcaagaagataccatc

        .       .       .       .       .       .       .       .       .       .       .       .
tgaccccatggcctccatgggttgggtcctgcaatttccactccaccacatttg
```

Exon 9 | Start: 8855 | End: 8908 | Length: 53

```
    .       .       .       .       .       .       .       .       .       .       .       .
gagatgctcagagatctcttggtaagattggagaaggttgacagggacttgtcttctaac

    .       .       .       .       .       .       .       .       .       .       .       .
ccatcttttccttcttctcaagggtccccaaggcttccaaggtcccctggtgagcctg

    .       .       .       .       .       .       .       .       .       .       .       .
gcgagcctggagcttcagtaagcactctctatacagattcatactccttctacaaacaca

    .       .       .       .       .       .       .       .       .       .       .       .
cagactctcctatagaagaactcccaggcctggggtcttccttacctcttcccttcaatc

    .       .       .       .       .       .       .       .       .       .       .       .
ccagccttccccttcttttttttcttatccatattctaaccacctcttctatctttttctag

        |651         |661        |671         |681         |691        .
GGTCCCATGGGTCCCCGAGGTCCCCCAGGTCCCCCTGGAAAGAATGGAGATGATgtaagt
G  P  M  G  P  R  G  P  P  G  P  P  G  K  N  G  D  D
                    |221                              |231

        .       .       .       .       .       .       .       .       .       .       .       .
atccccagcaagaagataccatctgaccccatggcctccatgggttgggtcctgcaattt

        .       .       .       .       .       .       .       .       .       .       .       .
ccactccaccacatttgggaacgatactcagaggaaggagggcaagtcctctctgatgca

        .       .       .       .       .       .       .       .       .       .       .       .
cggactgccctggaacaatgatctttttcgcttagtgagatgattccatgtccccaacaaa
```

9

```
          .         .         .         .         .         .         .         .         .         .
gtgactgttctcctcaccccagccaccttagagcaatccccaaccccatccctttggggga


          .         .         .         .         .         .         .         .         .         .
aattggtgcgcagatggtgaaattaaaatgctggtgacagaagtagacagaaat



Exon 10 | Start: 9407 | End: 9460 | Length: 53
BE AWARE: This section overlaps with the following exon



     .         .         .         .         .         .         .         .         .         .
ctcaccccagccaccttagagcaatccccaaccccatccctttggggaaattggtgcgca


     .         .         .         .         .         .         .         .         .         .
gatggtgaaattaaaatgctggtgacagaagtagacagaaattcctttagaggcactcag


     .         .         .         .         .         .         .         .         .         .
atttcaccaaacgaaggtttcactgtagatttaaactgagctctagattcaaagataaga


     .         .         .         .         .         .         .         .         .         .
ttctgggcccccaaacctgacctgcaacaatccaaagaagactgagaccttctccacttt


     .         .         .         .         .         .         .         .         .         .
tccagcccctaggcggtggtggggaggcagaggcatgatggtctttctctccctctcag


     |701       |711       |721       |731       |741              .
GGGGAAGCTGGAAAACCTGGTCGTCCTGGTGAGCGTGGGCCTCCTGGGCCTCAGgtgagc
 G   E   A   G   K   P   G   R   P   G   E   R   G   P   P   G   P   Q
                              |241


     .         .         .         .         .         .         .         .         .         .
aggggctgtggctgaacctgggcttcactgcacttgggcttcatttaggagctgggtcc


     .         .         .         .         .         .         .         .         .         .
acagtgatgtgttctaatggcccttccttgtcttcttcatctctctccagggtgctcgag


     .         .         .         .         .         .         .         .         .         .
gattgcccggaacagctggcctccctggaatgaagggacacagagtgagtcacctttgag


     .         .         .         .         .         .         .         .         .         .
tcatttaagctccccaagtccctagcatacccccatccagtcccaacctcttccccaaaa


     .         .         .         .         .         .         .         .         .         .
```

gatactgagttgcatcatggtgggtggcagctacagaagtcccaagggacagag

Exon 11 | Start: 9577 | End: 9630 | Length: 53


```
    .       .       .       .       .       .       .       .
aaagataagattctgggcccccaaacctgacctgcaacaatccaaagaagactgagacct

    .       .       .       .       .       .       .       .
tctccacttttccagcccctaggcggtggtggggaggcagaggcatgatggtcttttctc

    .       .       .       .       .       .       .       .
tccctctcaggggggaagctggaaaacctggtcgtcctggtgagcgtgggcctcctgggcc

    .       .       .       .       .       .       .       .
tcaggtgagcagggggctgtggctgaacctgggcttcactgcacttgggcttcatttagg

    .       .       .       .       .       .       .       .
agctgggtccacagtgatgtgttctaatggcccttccttgtcttcttcatctctctccag

|751      |761      |771      |781      |791      |801      .
GGTGCTCGAGGATTGCCCGGAACAGCTGGCCTCCCTGGAATGAAGGGACACAGAgtgagt
 G   A   R   G   L   P   G   T   A   G   L   P   G   M   K   G   H   R
|251                                      |261

        .       .       .       .       .       .       .       .
cacctttgagtcatttaagctccccaagtccctagcataccccccatccagtcccaacctc

        .       .       .       .       .       .       .       .
ttccccaaaagatactgagttgcatcatggtgggtggcagctacagaagtcccaagggac

        .       .       .       .       .       .       .       .
agagagtggacatccaaaagcacctccctccatgggaaagcagtcccgattaaacgattg

        .       .       .       .       .       .       .       .
ggtgagatctagagccagttggggtttagtctagctcagaaacaaagggatggcggtgat

        .       .       .       .       .       .       .       .
gacctcccaaggctctttctcagatctaggtggatgtcaaggctgttccacccc
```


Exon 12 | Start: 9970 | End: 10023 | Length: 53

BE AWARE: This section overlaps with the following exon

    .   .   .   .
agcataccccccatccagtcccaacctcttccccaaaagatactgagttgcatcatggtgg

    .   .   .   .
gtggcagctacagaagtcccaagggacagagagtggacatccaaaagcacctccctccat

    .   .   .   .
gggaaagcagtcccgattaaacgattgggtgagatctagagccagttggggtttagtcta

    .   .   .   .
gctcagaaacaaagggatggcggtgatgacctcccaaggctctttctcagatctaggtgg

    .   .   .   .
atgtcaaggctgttccacccccctccacaggttcttaccttctacctctttcctgctttag

       |811 |821 |831 |841 |851   .
GGTTTCAGTGGTTTGGATGGTGCCAAGGGAGATGCTGGTCCTGCTGGTCCTAAGgtaaga
G   F   S   G   L   D   G   A   K   G   D   A   G   P   A   G   P   K
       |271 |281

    .   .   .   .
ggctgtctgaacatcatggtcctccacatccccagagtcccaccatgaatgaatttctca

    .   .   .   .
ctcattattctctgatctacagggtgagcctggcagccctggtgaaaatggagctcctgg

    .   .   .   .
tcagatggtgagtgtgcccagttccagagggcagggatggggcaggaggcaggggcaaga

    .   .   .   .
tggaggcctgggggaacaaggctgtctcccatctcatctgacttctcttggtttggttgt

    .   .   .   .
cagggcccccgtggcctgcctggtgagagaggtcgccctggagcccctggccct

Exon 13 | Start: 10112 | End: 10156 | Length: 44
BE AWARE: This section overlaps with the following exon

12

```
        .       .       .       .       .       .       .       .       .       .
     gattgggtgagatctagagccagttggggtttagtctagctcagaaacaaagggatggcg

        .       .       .       .       .       .       .       .       .       .
     gtgatgacctcccaaggctctttctcagatctaggtggatgtcaaggctgttccaccccc

        .       .       .       .       .       .       .       .       .       .
     tccacaggttcttaccttctacctctttcctgctttagggtttcagtggtttggatggtg

        .       .       .       .       .       .       .       .       .       .
     ccaagggagatgctggtcctgctggtcctaaggtaagaggctgtctgaacatcatggtcc

        .       .       .       .       .       .       .       .       .       .
     tccacatccccagagtcccaccatgaatgaatttctcactcattattctctgatctacag

      |861      |871      |881      |891      |901     .       .       .
     GGTGAGCCTGGCAGCCCTGGTGAAAATGGAGCTCCTGGTCAGATGgtgagtgtgcccagt
     G  E  P  G  S  P  G  E  N  G  A  P  G  Q  M
                 |291                          |301

        .       .       .       .       .       .       .       .       .       .
     tccagagggcagggatggggcaggaggcaggggcaagatggaggcctgggggaacaaggc

        .       .       .       .       .       .       .       .       .       .
     tgtctcccatctcatctgacttctcttggtttggttgtcagggcccccgtggcctgcctg

        .       .       .       .       .       .       .       .       .       .
     gtgagagaggtcgccctggagcccctggccctgctgtaagtactcctggcccccttggggg

        .       .       .       .       .       .       .       .       .       .
     atccctgagctctggaaggggctccccaggaactctagggactggccagtgctcagtgga

        .       .       .       .       .       .       .       .
     cttaacggggcttcccctctctcctgcagggtgctcgtggaaatg


Exon 14 | Start: 10273 | End: 10326 | Length: 53
BE AWARE: This section overlaps with the following exon


        .       .       .       .       .       .       .       .       .       .
     ttcagtggtttggatggtgccaagggagatgctggtcctgctggtcctaaggtaagaggc

        .       .       .       .       .       .       .       .       .       .
```

```
tgtctgaacatcatggtcctccacatccccagagtcccaccatgaatgaatttctcactc


  .     .     .     .     .     .     .     .     .     .     .

attattctctgatctacagggtgagcctggcagccctggtgaaaatggagctcctggtca


  .     .     .     .     .     .     .     .     .     .     .

gatggtgagtgtgcccagttccagagggcagggatggggcaggaggcaggggcaagatgg


  .     .     .     .     .     .     .     .     .     .     .

aggcctgggggaacaaggctgtctcccatctcatctgacttctcttggtttggttgtcag

        |911        |921       |931        |941        |951         .
GGCCCCCGTGGCCTGCCTGGTGAGAGAGGTCGCCCTGGAGCCCCTGGCCCTGCTgtaagt
G   P   R   G   L   P   G   E   R   G   R   P   G   A   P   G   P   A
                                 |311


      .     .     .     .     .     .     .     .     .     .     .

actcctggccccttggggatccctgagctctggaaggggctccccaggaactctaggga


      .     .     .     .     .     .     .     .     .     .     .

ctggccagtgctcagtggacttaacggggcttcccctctctcctgcagggtgctcgtgga


      .     .     .     .     .     .     .     .     .     .     .

aatgatggtgctactggtgctgccgggcccctgtgagtgtggcctgtaggcctcagggc


      .     .     .     .     .     .     .     .     .     .     .

ctgggagtggggagggtctcagtatctgctcttggggctgacaatgggagcaggttatg


      .     .     .     .     .     .     .     .     .     .     .

ttggtctgaaccccaggacttcctctgtcccagggtgtgacttgcagctgccat




Exon 15 | Start: 10441 | End: 10485 | Length: 44
BE AWARE: This section overlaps with the following exon



      .     .     .     .     .     .     .     .     .     .     .

agctcctggtcagatggtgagtgtgcccagttccagagggcagggatggggcaggaggca


      .     .     .     .     .     .     .     .     .     .     .

ggggcaagatggaggcctgggggaacaaggctgtctcccatctcatctgacttctcttgg


      .     .     .     .     .     .     .     .     .     .     .

tttggttgtcagggcccccgtggcctgcctggtgagagaggtcgccctggagcccctggc
```

14

```
         .         .         .         .         .         .         .         .         .         .         .         .
cctgctgtaagtactcctggccccttgggggatccctgagctctggaaggggctccccag

         .         .         .         .         .         .         .         .         .         .         .         .
gaactctagggactggccagtgctcagtggacttaacggggcttcccctctctcctgcag

    |961       |971       |981       |991       |1001  .         .         .
GGTGCTCGTGGAAATGATGGTGCTACTGGTGCTGCCGGGCCCCCTgtgagtgtggcctgt
G  A  R  G  N  D  G  A  T  G  A  A  G  P  P
    |321                             |331

         .         .         .         .         .         .         .         .         .         .         .         .
aggcctcagggcctgggagtggggaggggtctcagtatctgctcttggggctgacaatgg

         .         .         .         .         .         .         .         .         .         .         .         .
gagcaggttatgttggtctgaaccccaggacttcctctgtcccagggtgtgacttgcagc

         .         .         .         .         .         .         .         .         .         .         .         .
tgccatctcttccttctcgctgacatctccatttcattcacagggtcccaccggccccgc

         .         .         .         .         .         .         .         .         .         .         .         .
tggtcctcctggcttccctggtgctgttggtgctaaggtgagacccccactctcctcta

         .         .         .         .         .         .         .         .         .
agcatgaccctcatgggccaaggggttcatgtctccctgttcccc




Exon 16 | Start: 10664 | End: 10717 | Length: 53
BE AWARE: This section overlaps with the following exon




         .         .         .         .         .         .         .         .         .         .         .         .
tggaaggggctccccaggaactctagggactggccagtgctcagtggacttaacggggct

         .         .         .         .         .         .         .         .         .         .         .         .
tcccctctctcctgcagggtgctcgtggaaatgatggtgctactggtgctgccgggcccc

         .         .         .         .         .         .         .         .         .         .         .         .
ctgtgagtgtggcctgtaggcctcagggcctgggagtggggaggggtctcagtatctgct

         .         .         .         .         .         .         .         .         .         .         .         .
cttggggctgacaatgggagcaggttatgttggtctgaaccccaggacttcctctgtccc
```

15

```
          .         .         .         .         .         .         .         .         .         .         .         .
       agggtgtgacttgcagctgccatctcttccttctcgctgacatctccatttcattcacag

              |1011      |1021      |1031      |1041      |1051         .
       GGTCCCACCGGCCCCGCTGGTCCTCCTGGCTTCCCTGGTGCTGTTGGTGCTAAGgtgaga
       G   P   T   G   P   A   G   P   P   G   F   P   G   A   V   G   A   K
                        |341                                  |351


          .         .         .         .         .         .         .         .         .         .         .         .
       cccccactctcctctaagcatgaccctcatgggccaaggggttcatgtctccctgttcc

          .         .         .         .         .         .         .         .         .         .         .         .
       ccaaaccaaagggacccagagtggcaagagagcagcccgttcactaacacctttgtcctg

          .         .         .         .         .         .         .         .         .         .         .         .
       ggttctccgtctctgatcttagagtcctgatcattgctctcctgtccctgtctccccttc

          .         .         .         .         .         .         .         .         .         .         .         .
       ctcctgccatcccgagaggcaaggttgggtttcccagggtggcttctgatatgtcctttc

          .         .         .         .         .         .         .         .         .         .
       ttctgattcagggtgaagctggtccccaagggccccgaggctctgaaggtcccc



Exon 17 | Start: 10975 | End: 11073 | Length: 98
BE AWARE: This section overlaps with the following exon



          .         .         .         .         .         .         .         .         .         .         .         .
       ccccgctggtcctcctggcttccctggtgctgttggtgctaaggtgagaccccccactct

          .         .         .         .         .         .         .         .         .         .         .         .
       cctctaagcatgaccctcatgggccaaggggttcatgtctccctgttccccaaaccaaag

          .         .         .         .         .         .         .         .         .         .         .         .
       ggacccagagtggcaagagagcagcccgttcactaacacctttgtcctgggttctccgtc

          .         .         .         .         .         .         .         .         .         .         .         .
       tctgatcttagagtcctgatcattgctctcctgtccctgtctccccttcctcctgccatc

          .         .         .         .         .         .         .         .         .         .         .         .
       ccgagaggcaaggttgggtttcccagggtggcttctgatatgtcctttcttctgattcag

              |1061      |1071      |1081      |1091      |1101      |1111
```

```
GGTGAAGCTGGTCCCCAAGGGCCCCGAGGCTCTGAAGGTCCCCAGGGTGTGCGTGGTGAG
G   E   A   G   P   Q   G   P   R   G   S   E   G   P   Q   G   V   R   G   E
                        |361                            |371


     |1121      |1131       |1141       |1151     .     .     .     .
CCTGGCCCCCCTGGCCCTGCTGGTGCTGCTGGCCCTGCTgtaagtgtccccgactcagtg
P   G   P   P   G   P   A   G   A   A   G   P   A
                        |381



    .     .     .     .     .     .     .     .     .     .     .     .
tcccctttgccactttctaacctcagagtccttgcctgttgctgacactcctttctctgt

    .     .     .     .     .     .     .     .     .     .     .     .
gccacagggaaaccctggtgctgatggacagcctggtgctaaaggtgccaatgtaagtat

    .     .     .     .     .     .     .     .     .     .     .     .
cctgccaggcttcagtcccactcctgccgcctgcagcctgcctgcccctttccctctgct

    .     .     .     .     .     .     .     .     .     .     .     .
cctaggctcacgccctggctgtctgcctcccacagggtgctcctggtattgctggtgctc

    .     .     .     .     .     .     .     .     .
ctggcttccctggtgcccgaggcccctctggaccccagg



Exon 18 | Start: 11162 | End: 11206 | Length: 44
BE AWARE: This section overlaps with the following exon



    .     .     .     .     .     .     .     .     .     .     .     .
ttagagtcctgatcattgctctcctgtccctgtctccccttcctcctgccatcccgagag

    .     .     .     .     .     .     .     .     .     .     .     .
gcaaggttgggtttcccagggtggcttctgatatgtcctttcttctgattcagggtgaag

    .     .     .     .     .     .     .     .     .     .     .     .
ctggtccccaagggccccgaggctctgaaggtccccagggtgtgcgtggtgagcctggcc

    .     .     .     .     .     .     .     .     .     .     .     .
cccctggccctgctggtgctgctggccctgctgtaagtgtccccgactcagtgtcccctt

    .     .     .     .     .     .     .     .     .     .     .     .
tgccactttctaacctcagagtccttgcctgttgctgacactcctttctctgtgccacag
```

17

```
    |1161      |1171      |1181      |1191       .      .      .
GGAAACCCTGGTGCTGATGGACAGCCTGGTGCTAAAGGTGCCAATgtaagtatcctgcca
G  N  P  G  A  D  G  Q  P  G  A  K  G  A  N
               |391


       .      .      .      .      .      .      .      .      .      .
ggcttcagtcccactcctgccgcctgcagcctgcctgcccctttccctctgctcctaggc


       .      .      .      .      .      .      .      .      .      .
tcacgccctggctgtctgcctcccacagggtgctcctggtattgctggtgctcctggctt


       .      .      .      .      .      .      .      .      .      .
ccctggtgcccgaggcccctctggaccccagggccccggcggccctcctggtcccaaggg


       .      .      .      .      .      .      .      .      .      .
taacagcgtgagtaccaaactctcccttctgcccaccccatgcactggctccagtgcggc


       .      .      .      .      .      .      .      .      .
tctcatctggggagcaggaagacgcaggccaactgagcgcccccg



Exon 19 | Start: 11310 | End: 11408 | Length: 98
BE AWARE: This section overlaps with the following exon



       .      .      .      .      .      .      .      .      .      .
aggtccccagggtgtgcgtggtgagcctggcccccctggccctgctggtgctgctggccc


       .      .      .      .      .      .      .      .      .      .
tgctgtaagtgtccccgactcagtgtcccctttgccactttctaacctcagagtccttgc


       .      .      .      .      .      .      .      .      .      .
ctgttgctgacactcctttctctgtgccacagggaaaccctggtgctgatggacagcctg


       .      .      .      .      .      .      .      .      .      .
gtgctaaaggtgccaatgtaagtatcctgccaggcttcagtcccactcctgccgcctgca


       .      .      .      .      .      .      .      .      .      .
gcctgcctgcccctttccctctgctcctaggctcacgccctggctgtctgcctcccacag

|1201      |1211      |1221      |1231      |1241      |1251
GGTGCTCCTGGTATTGCTGGTGCTCCTGGCTTCCCTGGTGCCCGAGGCCCCTCTGGACCC
G  A  P  G  I  A  G  A  P  G  F  P  G  A  R  G  P  S  G  P
|401                              |411
```

18

```
|1261      |1271      |1281      |1291       .      .      .      .
CAGGGCCCCGGCGGCCCTCCTGGTCCCAAGGGTAACAGCgtgagtaccaaactctccctt
Q   G   P   G   G   P   P   G   P   K   G   N   S
|421                               |431
```

```
          .      .      .      .      .      .      .      .      .      .
ctgcccaccccatgcactggctccagtgcggctctcatctggggagcaggaagacgcagg
```

```
          .      .      .      .      .      .      .      .      .      .
ccaactgagcgcccccgactctcagctcatcctcttctccccccttgcagggtgaacctg
```

```
          .      .      .      .      .      .      .      .      .      .
gtgctcctggcagcaaaggagacactggtgctaagggagagcctgtaagtctccccgcca
```

```
          .      .      .      .      .      .      .      .      .      .
tccttcttgcagcccagcccaccctgccctaggagccccctgagggaaatccagaaagga
```

```
          .      .      .      .      .      .      .      .
agaggagcccctagtcttctgggggagtccctgccacac
```

Exon 20 | Start: 11540 | End: 11593 | Length: 53
BE AWARE: This section overlaps with the following exon

```
          .      .      .      .      .      .      .      .      .      .
gccgcctgcagcctgcctgcccctttccctctgctcctaggctcacgccctggctgtctg
```

```
          .      .      .      .      .      .      .      .      .      .
cctcccacagggtgctcctggtattgctggtgctcctggcttccctggtgcccgaggccc
```

```
          .      .      .      .      .      .      .      .      .      .
ctctggaccccagggccccggcggccctcctggtcccaagggtaacagcgtgagtaccaa
```

```
          .      .      .      .      .      .      .      .      .      .
actctcccttctgcccaccccatgcactggctccagtgcggctctcatctggggagcagg
```

```
          .      .      .      .      .      .      .      .      .      .
aagacgcaggccaactgagcgcccccgactctcagctcatcctcttctccccccttgcag
```

```
 |1301      |1311      |1321      |1331      |1341      |1351   .
GGTGAACCTGGTGCTCCTGGCAGCAAAGGAGACACTGGTGCTAAGGGAGAGCCTgtaagt
G   E   P   G   A   P   G   S   K   G   D   T   G   A   K   G   E   P
```

```
      .    .    .    .    .    .    .    .    .    .    .    .
ctccccgccatccttcttgcagcccagcccaccctgccctaggagccccctgagggaaat

      .    .    .    .    .    .    .    .    .    .    .    .
ccagaaaggaagaggagcccctagtcttctgggggagtccctgccacacccccaggaacc

      .    .    .    .    .    .    .    .    .    .    .    .
cctgacactggaggcccagcctcagccggctctgaggctggcacaggatggcccctcacc

      .    .    .    .    .    .    .    .    .    .    .    .
acaggccgcctcctcctctcggccctctccagggccctgttggtgttcaaggaccccctg

      .    .    .    .    .    .    .    .    .    .    .    .
gccctgctggagaggaaggaaagcgaggagctcgaggtgaacccggacccactg
```

Exon 21 | Start: 11812 | End: 11919 | Length: 107
BE AWARE: This section overlaps with the following exon

```
 .    .    .    .    .    .    .    .    .    .    .    .
cagctcatcctcttctcccccccttgcagggtgaacctggtgctcctggcagcaaaggaga

 .    .    .    .    .    .    .    .    .    .    .    .
cactggtgctaagggagagcctgtaagtctccccgccatccttcttgcagcccagcccac

 .    .    .    .    .    .    .    .    .    .    .    .
cctgccctaggagccccctgagggaaatccagaaaggaagaggagcccctagtcttctgg

 .    .    .    .    .    .    .    .    .    .    .    .
gggagtccctgccacacccccaggaacccctgacactggaggcccagcctcagccggctc

 .    .    .    .    .    .    .    .    .    .    .    .
tgaggctggcacaggatggcccctcaccacaggccgcctcctcctctcggccctctccag

    |1361      |1371      |1381      |1391      |1401      |1411
GGCCCTGTTGGTGTTCAAGGACCCCCTGGCCCTGCTGGAGAGGAAGGAAAGCGAGGAGCT
G   P   V   G   V   Q   G   P   P   G   P   A   G   E   E   G   K   R   G   A
                              |461                                |471

    |1421      |1431      |1441      |1451      |1461.    .
CGAGGTGAACCCGGACCCACTGGCCTGCCCGGACCCCCTGGCGAGCGTgtaagtgtccct
```

20

```
R   G   E   P   G   P   T   G   L   P   G   P   P   G   E   R
                                |481


    .       .       .       .       .       .       .       .       .       .       .       .
gcccgccccctcccgctccaccctcattgcctggctggtgcctgtgtgtcgcggagttca


    .       .       .       .       .       .       .       .       .       .       .       .
ctggcctcctctcctcctgcagggtggacctggtagccgtggtttccctggcgcagatgg


    .       .       .       .       .       .       .       .       .       .       .       .
tgttgctggtcccaaggtaacctctccttgcggccggggggctgaccctgccgctccctg


    .       .       .       .       .       .       .       .       .       .       .       .
ggcatcttcttcctcttttggcccgtggcaaagagccacaaacttgagaccctaactgtt


    .       .       .       .       .       .       .       .       .       .
cctgtgacttcccccaaccagggtcccgctggtgaacgtggttctcct




Exon 22 | Start: 12014 | End: 12067 | Length: 53
BE AWARE: This section overlaps with the following exon


    .       .       .       .       .       .       .       .       .       .       .       .
ggaacccctgacactggaggcccagcctcagccggctctgaggctggcacaggatggccc


    .       .       .       .       .       .       .       .       .       .       .       .
ctcaccacaggccgcctcctcctctcggccctctccagggccctgttggtgttcaaggac


    .       .       .       .       .       .       .       .       .       .       .       .
cccctggccctgctggagaggaaggaaagcgaggagctcgaggtgaacccggacccactg


    .       .       .       .       .       .       .       .       .       .       .       .
gcctgcccggaccccctggcgagcgtgtaagtgtccctgcccgccccctcccgctccacc


    .       .       .       .       .       .       .       .       .       .       .       .
ctcattgcctggctggtgcctgtgtgtcgcggagttcactggcctcctctcctcctgcag

            |1471        |1481        |1491        |1501        |1511        .
GGTGGACCTGGTAGCCGTGGTTTCCCTGGCGCAGATGGTGTTGCTGGTCCCAAGgtaacc
G   G   P   G   S   R   G   F   P   G   A   D   G   V   A   G   P   K
            |491                             |501


    .       .       .       .       .       .       .       .       .       .       .       .
```

21

```
tctccttgcggccggggggctgaccctgccgctccctgggcatcttcttcctctttttggc


    .    .    .    .    .    .    .    .    .    .    .
ccgtggcaaagagccacaaacttgagaccctaactgttcctgtgacttcccccaaccagg


    .    .    .    .    .    .    .    .    .    .    .
gtcccgctggtgaacgtggttctcctggccctgctggccccaaaggatctcctggtgaag


    .    .    .    .    .    .    .    .    .    .    .
ctggtcgtcccggtgaagctggtctgcctggtgccaaggtgaggcccccaggctttcagcc


    .    .    .    .    .    .    .    .    .    .
tggcttggccaggccctgaccatcccgtgtagggtctgggatgaggcgttctgg



Exon 23 | Start: 12193 | End: 12291 | Length: 98
BE AWARE: This section overlaps with the following exon



    .    .    .    .    .    .    .    .    .    .    .
ggcctgcccggaccccctggcgagcgtgtaagtgtccctgcccgccccctcccgctccac


    .    .    .    .    .    .    .    .    .    .    .
cctcattgcctggctggtgcctgtgtgtcgcggagttcactggcctcctctcctcctgca


    .    .    .    .    .    .    .    .    .    .    .
gggtggacctggtagccgtggtttccctggcgcagatggtgttgctggtcccaaggtaac


    .    .    .    .    .    .    .    .    .    .    .
ctctccttgcggccggggggctgaccctgccgctccctgggcatcttcttcctctttttgg


    .    .    .    .    .    .    .    .    .    .    .
cccgtggcaaagagccacaaacttgagaccctaactgttcctgtgacttcccccaaccag

     |1521     |1531     |1541     |1551     |1561     |1571
GGTCCCGCTGGTGAACGTGGTTCTCCTGGCCCTGCTGGCCCCAAAGGATCTCCTGGTGAA
 G  P  A  G  E  R  G  S  P  G  P  A  G  P  K  G  S  P  G  E
              |511                              |521

     |1581     |1591     |1601     |1611     .    .    .    .
GCTGGTCGTCCCGGTGAAGCTGGTCTGCCTGGTGCCAAGgtgaggcccccaggctttcagc
 A  G  R  P  G  E  A  G  L  P  G  A  K
                    |531
```

22

```
         .         .         .         .         .         .         .         .         .         .         .         .
ctggcttggccaggccctgaccatcccgtgtagggtctgggatgaggcgttctggatcag

         .         .         .         .         .         .         .         .         .         .         .         .
gcccaagggtctgccctctggagtcctcccccacctccatcatgcttctccccaagtccc

         .         .         .         .         .         .         .         .         .         .         .         .
actcatacctctctgcctccctagggtctgactggaagccctggcagccctggtcctgat

         .         .         .         .         .         .         .         .         .         .         .         .
ggcaaaactggcccccctgtaagtatcactccccctgaaccccctgccattgtcctgtct

         .         .         .         .         .         .         .         .         .
gcctccctgctgtcctcactgctgctttcgtgcctccca


Exon 24 | Start: 12457 | End: 12510 | Length: 53
BE AWARE: This section overlaps with the following exon


         .         .         .         .         .         .         .         .         .         .         .         .
gagaccctaactgttcctgtgacttcccccaaccagggtcccgctggtgaacgtggttct

         .         .         .         .         .         .         .         .         .         .         .         .
cctggccctgctggccccaaaggatctcctggtgaagctggtcgtcccggtgaagctggt

         .         .         .         .         .         .         .         .         .         .         .         .
ctgcctggtgccaaggtgaggcccccaggctttcagcctggcttggccaggccctgaccat

         .         .         .         .         .         .         .         .         .         .         .         .
cccgtgtagggtctgggatgaggcgttctggatcaggcccaagggtctgccctctggagt

         .         .         .         .         .         .         .         .         .         .         .         .
cctcccccacctccatcatgcttctccccaagtcccactcatacctctctgcctccctag

        |1621      |1631      |1641      |1651      |1661      .
GGTCTGACTGGAAGCCCTGGCAGCCCTGGTCCTGATGGCAAAACTGGCCCCCCTgtaagt
G   L   T   G   S   P   G   S   P   G   P   D   G   K   T   G   P   P
        |541                              |551

         .         .         .         .         .         .         .         .         .         .         .         .
atcactccccctgaaccccctgccattgtcctgtctgcctccctgctgtcctcactgctg

         .         .         .         .         .         .         .         .         .         .         .         .
```

23

```
ctttcgtgcctcccatccttagggtcccgccggtcaagatggtcgccccggaccccagg

     .    .    .    .    .    .    .    .    .    .    .    .
cccacctggtgcccgtggtcaggctggtgtgatgggattccctggacctaaaggtgctgc

     .    .    .    .    .    .    .    .    .    .    .    .
tgtgagtattaagtgaggatccatgaagagccagggacaaacacacctgagacttgaagg

     .    .    .    .    .    .    .    .    .    .    .    .
agtcctgggctctgggctcagctgtgccgctgacctgccgtgtggccactcact
```

Exon 25 | Start: 12599 | End: 12697 | Length: 98

```
    .    .    .    .    .    .    .    .    .    .    .    .
cccaggctttcagcctggcttggccaggccctgaccatcccgtgtagggtctgggatgag

    .    .    .    .    .    .    .    .    .    .    .    .
gcgttctggatcaggcccaagggtctgccctctggagtcctcccccacctccatcatgct

    .    .    .    .    .    .    .    .    .    .    .    .
tctccccaagtcccactcatacctctctgcctccctagggtctgactggaagccctggca

    .    .    .    .    .    .    .    .    .    .    .    .
gccctggtcctgatggcaaaactggcccccctgtaagtatcactccccctgaaccccctg

    .    .    .    .    .    .    .    .    .    .    .    .
ccattgtcctgtctgcctccctgctgtcctcactgctgctttcgtgcctcccatccttag

    |1671     |1681     |1691     |1701     |1711     |1721
GGTCCCGCCGGTCAAGATGGTCGCCCCGGACCCCCAGGCCCACCTGGTGCCCGTGGTCAG
G   P   A   G   Q   D   G   R   P   G   P   P   G   P   P   G   A   R   G   Q
             |561                              |571

    |1731     |1741     |1751     |1761         .    .    .    .
GCTGGTGTGATGGGATTCCCTGGACCTAAAGGTGCTGCTgtgagtattaagtgaggatcc
A   G   V   M   G   F   P   G   P   K   G   A   A
             |581

    .    .    .    .    .    .    .    .    .    .    .    .
atgaagagccagggacaaacacacctgagacttgaaggagtcctgggctctgggctcagc

    .    .    .    .    .    .    .    .    .    .    .    .
```

tgtgccgctgacctgccgtgtggccactcactctcactttctggacctcagcctccctat

.   .   .   .

ctgtaaaatgaaagacttctcggcggggcacggtggctcatgcctgtaatcccagcactt

.   .   .   .

tgggaggccaaggcgggcagaccatgaggtcaggagtttgagaccagtcgggccaacata

.   .   .   .

gtgaaaccacgtctctactaaaaatacaaaagattagct

Exon 26 | Start: 13593 | End: 13646 | Length: 53
BE AWARE: This section overlaps with the following exon

.   .   .   .

cagtcttggtggattctttgaggtccaaaaggagatagcagagaagatgaaagccctttg

.   .   .   .

cagtgcaggccacagcgggcatctaacagggaaaaggcagaggagcctggaagggcatct

.   .   .   .

tgggaggagtgggctcagaaagggcccagcaagaagcacctgcaggggcattccccgggg

.   .   .   .

gccaaacagtcttttgaaaagaaagtcccttaaaaagtcccactcagagtaaatgagagg

.   .   .   .

ccccaggaggccctggcttctcacttcagccccctcaaccctaactccctttctccacag

```
    |1771      |1781      |1791      |1801      |1811      |1821.
GGAGAGCCCGGCAAGGCTGGAGAGCGAGGTGTTCCCGGACCCCCTGGCGCTGTCgtaagt
 G   E   P   G   K   A   G   E   R   G   V   P   G   P   P   G   A   V
    |591                           |601
```

.   .   .   .

atctcctttccatccctacctccttcccattgctgccccggcactttctcctccctgcag

.   .   .   .

gaggggtgctagaggccacggtcctcagctgctcggggcctcctaaccctgagttcccct

.   .   .   .

ttgctctctccctgcagggtcctgctggcaaagatggagaggctggagctcagggacccc

```
        .       .       .       .       .       .       .       .       .       .       .       .
    ctggccctgctgtgagtgtccctgatggggagatctggggagcagaaaaggggagacacc

        .       .       .       .       .       .       .       .       .       .       .       .
    ctcagcccctcgtctcctcggcctccccgtgactgtagtgttctctctgtgcag
```

Exon 27 | Start: 13790 | End: 13843 | Length: 53
BE AWARE: This section overlaps with the following exon

```
        .       .       .       .       .       .       .       .       .       .       .       .
    aaagaaagtcccttaaaaagtcccactcagagtaaatgagaggccccaggaggccctggc

        .       .       .       .       .       .       .       .       .       .       .       .
    ttctcacttcagcccccctcaaccctaactccctttctccacagggagagcccggcaaggc

        .       .       .       .       .       .       .       .       .       .       .       .
    tggagagcgaggtgttcccggaccccctggcgctgtcgtaagtatctcctttccatccct

        .       .       .       .       .       .       .       .       .       .       .       .
    acctccttcccattgctgccccggcactttctcctccctgcaggaggggtgctagaggcc

        .       .       .       .       .       .       .       .       .       .       .       .
    acggtcctcagctgctcggggcctcctaaccctgagttcccctttgctctctccctgcag

              |1831      |1841      |1851      |1861      |1871      .
    GGTCCTGCTGGCAAAGATGGAGAGGCTGGAGCTCAGGGACCCCCTGGCCCTGCTgtgagt
    G   P   A   G   K   D   G   E   A   G   A   Q   G   P   P   G   P   A
              |611                           |621

        .       .       .       .       .       .       .       .       .       .       .       .
    gtccctgatggggagatctggggagcagaaaaggggagacaccctcagcccctcgtctcc

        .       .       .       .       .       .       .       .       .       .       .       .
    tcggcctccccgtgactgtagtgttctctctgtgcagggtcccgctggcgagagaggtga

        .       .       .       .       .       .       .       .       .       .       .       .
    acaaggccctgctggctcccccggattccaggtgaggcctcatggctgtcaggatgctgg

        .       .       .       .       .       .       .       .       .       .       .       .
    gaggtaggggtaggaaacacctctttggtctcttccagattctaaaccttccctcccttc
```

26

```
       .         .         .         .         .         .         .         .         .         .
ttcccccatttcccacctacagggtctccctggtcctgctggtcctccaggtga
```

Exon 28 | Start: 13947 | End: 14000 | Length: 53
BE AWARE: This section overlaps with the following exon

```
   .         .         .         .         .         .         .         .         .         .
gtaagtatctcctttccatccctacctccttcccattgctgccccggcactttctcctcc

   .         .         .         .         .         .         .         .         .         .
ctgcaggaggggtgctagaggccacggtcctcagctgctcggggcctcctaaccctgagt

   .         .         .         .         .         .         .         .         .         .
tcccctttgctctctccctgcagggtcctgctggcaaagatggagaggctggagctcagg

   .         .         .         .         .         .         .         .         .         .
gaccccctggccctgctgtgagtgtccctgatggggagatctggggagcagaaaaggggga

   .         .         .         .         .         .         .         .         .         .
gacaccctcagcccctcgtctcctcggcctccccgtgactgtagtgttctctctgtgcag

     |1881      |1891      |1901      |1911      |1921           .
GGTCCCGCTGGCGAGAGAGGTGAACAAGGCCCTGCTGGCTCCCCCGGATTCCAGgtgagg
G  P  A  G  E  R  G  E  Q  G  P  A  G  S  P  G  F  Q
             |631                                 |641

    .         .         .         .         .         .         .         .         .         .
cctcatggctgtcaggatgctgggaggtaggggtaggaaacacctctttggtctcttcca

    .         .         .         .         .         .         .         .         .         .
gattctaaaccttccctcccttcttcccccatttcccacctacagggtctccctggtcct

    .         .         .         .         .         .         .         .         .         .
gctggtcctccaggtgaagcaggcaaacctggtgaacaggtaagagggagcagccggcca

    .         .         .         .         .         .         .         .         .         .
gaggggtgggagatgcagggaatccagagggacaggcccccgctcctagctaatcagaca

    .         .         .         .         .         .         .         .         .         .
gccatcaactagagggattgaggttagacgccggaaagaacttcctcccatgaa
```

Exon 29 | Start: 14112 | End: 14165 | Length: 53


```
        .         .         .         .         .         .

aggctggagctcagggacccctggccctgctgtgagtgtccctgatggggagatctggg

        .         .         .         .         .         .

gagcagaaaaggggagacaccctcagcccctcgtctcctcggcctcccgtgactgtagt

        .         .         .         .         .         .

gttctctctgtgcagggtcccgctggcgagagaggtgaacaaggccctgctggctccccc

        .         .         .         .         .         .

ggattccaggtgaggcctcatggctgtcaggatgctgggaggtaggggtaggaaacacct

        .         .         .         .         .         .

ctttggtctcttccagattctaaaccttccctcccttcttcccccatttcccacctacag

 |1931      |1941      |1951      |1961      |1971      |1981    .
GGTCTCCCTGGTCCTGCTGGTCCTCCAGGTGAAGCAGGCAAACCTGGTGAACAGgtaaga
 G  L  P  G  P  A  G  P  P  G  E  A  G  K  P  G  E  Q
                      |651                          |661


        .         .         .         .         .         .

gggagcagccggccagagggggtgggagatgcagggaatccagagggacaggcccccgctc

        .         .         .         .         .         .

ctagctaatcagacagccatcaactagagggattgaggttagacgccggaaagaacttcc

        .         .         .         .         .         .

tcccatgaagggagcagcacagagggaagtgggggctgcatgattgctagtctgggtgac

        .         .         .         .         .         .

ttcttttaagagctgctggaatatgctgtgactttccctcaacccttctattgataaatc

        .         .         .         .         .         .

ttggtccatagtttggggaggggggaagcctttgacacatccctaggaggaaga
```


Exon 30 | Start: 14616 | End: 14660 | Length: 44
BE AWARE: This section overlaps with the following exon

```
        .         .         .         .         .         .         .         .         .         .         .         .
ggaagtgggggctgcatgattgctagtctgggtgacttcttttaagagctgctggaatat

        .         .         .         .         .         .         .         .         .         .         .         .
gctgtgactttccctcaacccttctattgataaatcttggtccatagtttggggaggggg

        .         .         .         .         .         .         .         .         .         .         .         .
gaagcctttgacacatccctaggaggaagagagggggctgtttgggataatctcaattcag

        .         .         .         .         .         .         .         .         .         .         .         .
tgctgagaaggggttcctctctaatcacggccagaccccaggaggaaggaccgtgctttc

        .         .         .         .         .         .         .         .         .         .         .         .
cagcagagtggccccaggtgggttttgctcactgtctgttcctctctcccctccccctcag

          |1991      |2001      |2011      |2021         .       .       .
GGTGTTCCTGGAGACCTTGGCGCCCCTGGCCCCTCTGGAGCAAGAgtaagtaggcctctc
G   V   P   G   D   L   G   A   P   G   P   S   G   A   R
                                |671

        .         .         .         .         .         .         .         .         .         .         .         .
tcgctgcatccgtcaaggtgcgtcgtacttggccctatctccagagcagccttcacatgc

        .         .         .         .         .         .         .         .         .         .         .         .
cctgtccttcccttctagggcgagagaggtttccctggcgagcgtggtgtgcaaggtccc

        .         .         .         .         .         .         .         .         .         .         .         .
cctggtcctgctggtccccgagggccaacggtgctcccggcaacgatggtgctaaggtg

        .         .         .         .         .         .         .         .         .         .         .         .
agggcagcgtggaaggggctctggcaagtggcccagggaccaggtctcacccctcctgca

        .         .         .         .         .         .         .         .         .
gcaggggatggcgggccatgaccaaagccatggagatagggtgtg


Exon 31 | Start: 14754 | End: 14852 | Length: 98
BE AWARE: This section overlaps with the following exon


        .         .         .         .         .         .         .         .         .         .         .         .
ctaggaggaagagagggggctgtttgggataatctcaattcagtgctgagaaggggttcct
```

```
     .     .     .     .     .     .     .     .     .     .     .     .
    ctctaatcacggccagaccccaggaggaaggaccgtgctttccagcagagtggccccagg

     .     .     .     .     .     .     .     .     .     .     .     .
    tgggttttgctcactgtctgttcctctctccctcccctcagggtgttcctggagacctt

     .     .     .     .     .     .     .     .     .     .     .     .
    ggcgcccctggcccctctggagcaagagtaagtaggcctctctcgctgcatccgtcaagg

     .     .     .     .     .     .     .     .     .     .     .     .
    tgcgtcgtacttggccctatctccagagcagccttcacatgccctgtccttcccttctag

       |2031      |2041      |2051      |2061      |2071      |2081
    GGCGAGAGAGGTTTCCCTGGCGAGCGTGGTGTGCAAGGTCCCCCTGGTCCTGCTGGTCCC
    G   E   R   G   F   P   G   E   R   G   V   Q   G   P   P   G   P   A   G   P
               |681                                  |691

       |2091      |2101      |2111      |2121      .     .     .     .
    CGAGGGGCCAACGGTGCTCCCGGCAACGATGGTGCTAAGgtgagggcagcgtggaagggg
    R   G   A   N   G   A   P   G   N   D   G   A   K
                   |701

     .     .     .     .     .     .     .     .     .     .     .     .
    ctctggcaagtggcccagggaccaggtctcacccctcctgcagcaggggatggcgggcca

     .     .     .     .     .     .     .     .     .     .     .     .
    tgaccaaagccatggagatagggtgtggggtgggggaaaagaccagggcaggggcccac

     .     .     .     .     .     .     .     .     .     .     .     .
    acacagcctggagtctgggctgtgagtctttcatcttttctcaaggcttgtcgttggcc

     .     .     .     .     .     .     .     .     .     .     .     .
    ttggaaacaagcctgggagataccaagcggggcttagggctgtgacccactcttggggcc

     .     .     .     .     .     .     .     .     .     .     .     .
    ccaggcctcactccagtcttcttggttgtcacatagggt


    Exon 32 | Start: 15150 | End: 15257 | Length: 107



     .     .     .     .     .     .     .     .     .     .     .     .
    aaggtgagggcagcgtggaagggctctggcaagtggcccagggaccaggtctcacccct
```

```
       .        .        .        .        .        .        .        .        .        .        .        .
    cctgcagcaggggatggcgggccatgaccaaagccatggagatagggtgtggggtggggg

       .        .        .        .        .        .        .        .        .        .        .        .
    gaaaagaccagggcaggggcccacacacagcctggagtctgggctgtgagtcttttcatc

       .        .        .        .        .        .        .        .        .        .        .        .
    ttttctcaaggcttgtcgttggccttggaaacaagcctgggagataccaagcggggctta

       .        .        .        .        .        .        .        .        .        .        .        .
    gggctgtgacccactcttggggccccaggcctcactccagtcttcttggttgtcacatag

       |2131      |2141      |2151      |2161      |2171      |2181
    GGTGATGCTGGTGCCCCTGGAGCTCCCGGTAGCCAGGGCGCCCCTGGCCTTCAGGGAATG
    G  D  A  G  A  P  G  A  P  G  S  Q  G  A  P  G  L  Q  G  M
       |711                                         |721

       |2191      |2201      |2211      |2221      |2231      .        .
    CCTGGTGAACGTGGTGCAGCTGGTCTTCCAGGGCCTAAGGGTGACAGAgtaagttcaacc
    P  G  E  R  G  A  A  G  L  P  G  P  K  G  D  R
       |731                                         |741


       .        .        .        .        .        .        .        .        .        .        .        .
    ttccccctcccctgagccctacatggctcccatctctgcctgctttgaatctctcagcat

       .        .        .        .        .        .        .        .        .        .        .        .
    ctctccttctctctgggatctgtccctcttctcgctaatcctcccttcttcccctttccc

       .        .        .        .        .        .        .        .        .        .        .        .
    ctctggccttttttgctgatgaatcctctccctgtggtccaggcccatctatccccatggg

       .        .        .        .        .        .        .        .        .        .        .        .
    ttaccatggtgatgagaggtgggggcatctccttggtggaggctcccttattcatcccgc

       .        .        .        .        .        .        .        .        .        .        .        .
    tacacaagtcaggggcctcttaacctcagttccacctgagtctccagg



    Exon 33 | Start: 15716 | End: 15823 | Length: 107
    BE AWARE: This section overlaps with the following exon



       .        .        .        .        .        .        .        .        .        .        .        .
    ctccctgtggtccaggcccatctatccccatgggttaccatggtgatgagaggtgggggc
```

31

```
      .        .        .        .        .        .        .        .        .        .        .        .
    atctccttggtggaggctcccttattcatcccgctacacaagtcaggggcctcttaacct

      .        .        .        .        .        .        .        .        .        .        .        .
    cagttccacctgagtctccaggcaggcacccttttcctgaaagaatctttgagtccttg

      .        .        .        .        .        .        .        .        .        .        .        .
    gcccaggtggaggcagggcagagctgcagagggcctctcaggaaacccagacacaagcag

      .        .        .        .        .        .        .        .        .        .        .        .
    aacactataggtcacctccttgccccacactggaaatctcaagcttatccatgtctttag

          |2241      |2251      |2261      |2271      |2281      |2291
    GGTGATGCTGGTCCCAAAGGTGCTGATGGCTCTCCTGGCAAAGATGGCGTCCGTGGTCTG
    G   D   A   G   P   K   G   A   D   G   S   P   G   K   D   G   V   R   G   L
                      |751                                        |761

          |2301      |2311      |2321      |2331      |2341  .        .
    ACTGGCCCCATTGGTCCTCCTGGCCCTGCTGGTGCCCCTGGTGACAAGgtgaggtggccg
    T   G   P   I   G   P   P   G   P   A   G   A   P   G   D   K
                      |771                                        |781


       .        .        .        .        .        .        .        .        .        .        .        .
    cctccccaccttctgccctaacacatagcctcctcagcaggcctgggcacggttccgtgg

       .        .        .        .        .        .        .        .        .        .        .        .
    ggttgcgttgggagagcaggtcctgccaaactgagctgtcaacctgggaacctggaggga

       .        .        .        .        .        .        .        .        .        .        .        .
    ccagaaggaggggaggctctcctggggtcatctactaggagtattcaggggaggccctga

       .        .        .        .        .        .        .        .        .        .        .        .
    ccctgagcctcttgtcccttgctctcagggtgaaagtggtcccagcggccctgctggtcc

       .        .        .        .        .        .        .        .        .        .        .
    cactggagctcgtggtgcccccgtaagtacagaagacctgttaagacc


    Exon 34 | Start: 16044 | End: 16097 | Length: 53
    BE AWARE: This section overlaps with the following exon



       .        .        .        .        .        .        .        .        .        .        .        .
```

```
gctctcctggcaaagatggcgtccgtggtctgactggcccccattggtcctcctggccctg

.    .    .    .    .    .    .    .    .    .    .    .
ctggtgcccctggtgacaaggtgaggtggccgcctcccaccttctgccctaacacatag

.    .    .    .    .    .    .    .    .    .    .    .
cctcctcagcaggcctgggcacggttccgtggggttgcgttgggagagcaggtcctgcca

.    .    .    .    .    .    .    .    .    .    .    .
aactgagctgtcaacctgggaacctggagggaccagaaggaggggaggctctcctggggt

.    .    .    .    .    .    .    .    .    .    .    .
catctactaggagtattcaggggaggccctgaccctgagcctcttgtcccttgctctcag

        |2351      |2361      |2371      |2381      |2391      .
GGTGAAAGTGGTCCCAGCGGCCCTGCTGGTCCCACTGGAGCTCGTGGTGCCCCCgtaagt
G   E   S   G   P   S   G   P   A   G   P   T   G   A   R   G   A   P
                            |791

.    .    .    .    .    .    .    .    .    .    .    .
acagaagacctgttaagaccccatacttggcccttccctcccttcacacagcacccctgg

.    .    .    .    .    .    .    .    .    .    .    .
ccctgtctgtgccttcaccccttgcctctcccctcaccgcatccccgccttccctcctgt

.    .    .    .    .    .    .    .    .    .    .    .
cagcgcatctctccaatctgactccttttcttctagggagaccgtggtgagcctggtccc

.    .    .    .    .    .    .    .    .    .    .    .
cccggccctgctggctttgctggcccccctgtgagtaccaagacccccatcatttttcat

.    .    .    .    .    .    .    .    .    .    .    .
caccgactgggacctgggacctcgagggacggaatgaggacaaaggcgtcagcc


Exon 35 | Start: 16260 | End: 16313 | Length: 53
BE AWARE: This section overlaps with the following exon


.    .    .    .    .    .    .    .    .    .    .    .
aaggaggggaggctctcctggggtcatctactaggagtattcaggggaggccctgaccct

.    .    .    .    .    .    .    .    .    .    .    .
gagcctcttgtcccttgctctcagggtgaaagtggtcccagcggccctgctggtcccact
```

33

```
         .         .         .         .         .         .         .         .         .         .         .         .
         ggagctcgtggtgcccccgtaagtacagaagacctgttaagaccccatacttggcccttc

         .         .         .         .         .         .         .         .         .         .         .         .
         cctcccttcacacagcacccctggccctgtctgtgccttcaccccttgcctctcccctca

         .         .         .         .         .         .         .         .         .         .         .         .
         ccgcatccccgccttccctcctgtcagcgcatctctccaatctgactccttttcttctag

            |2401      |2411      |2421      |2431      |2441      |2451.
         GGAGACCGTGGTGAGCCTGGTCCCCCCGGCCCTGCTGGCTTTGCTGGCCCCCCTgtgagt
         G  D  R  G  E  P  G  P  P  G  P  A  G  F  A  G  P  P
            |801                           |811

            .         .         .         .         .         .         .         .         .         .         .         .
         accaagacccccatcattttcatcaccgactgggacctgggacctcgagggacggaatg

            .         .         .         .         .         .         .         .         .         .         .         .
         aggacaaaggcgtcagccatcctcaggggagaaagggtggagacgggattgtttcccaccc

            .         .         .         .         .         .         .         .         .         .         .         .
         aagcatcttcctgcctccattactgctcctcccccaggtagtggaaactcctgcctcctt

            .         .         .         .         .         .         .         .         .         .         .         .
         ccctccattcaccgccctgcttcctcccccagggtgctgacggccaacctggtgctaaag

            .         .         .         .         .         .         .         .         .         .         .         .
         gcgaacctggtgatgctggtgctaaaggcgatgctggtcccccctggccctgccg


         Exon 36 | Start: 16532 | End: 16639 | Length: 107
         BE AWARE: This section overlaps with the following exon


            .         .         .         .         .         .         .         .         .         .         .         .
         ctctccaatctgactccttttcttctagggagaccgtggtgagcctggtcccccggccc

            .         .         .         .         .         .         .         .         .         .         .         .
         tgctggctttgctggccccccctgtgagtaccaagacccccatcattttcatcaccgact

            .         .         .         .         .         .         .         .         .         .         .         .
         gggacctgggacctcgagggacggaatgaggacaaaggcgtcagccatcctcaggggaga
```

34

```
      .         .         .         .         .         .         .
      agggtggagacgggattgtttcccacccaagcatcttcctgcctccattactgctcctcc


      .         .         .         .         .         .         .
      cccaggtagtggaaactcctgcctccttccctccattcaccgccctgcttcctcccccag


               |2461      |2471      |2481      |2491      |2501      |2511
      GGTGCTGACGGCCAACCTGGTGCTAAAGGCGAACCTGGTGATGCTGGTGCTAAAGGCGAT
      G  A  D  G  Q  P  G  A  K  G  E  P  G  D  A  G  A  K  G  D
               |821                              |831


               |2521      |2531      |2541      |2551      .         .
      GCTGGTCCCCCTGGCCCTGCCGGACCCGCTGGACCCCCTGGCCCCATTgtgagtggcttg
      A  G  P  P  G  P  A  G  P  A  G  P  P  G  P  I
               |841                              |851


        .         .         .         .         .         .         .
      gccctctgtgcccacgaggctggtgggctgggacccaggacgggtccaggcttgatgcct


        .         .         .         .         .         .         .
      ctgtgctctcctacagggtaatgttggtgctcctggagccaaaggtgctcgcggcagcgc


        .         .         .         .         .         .         .
      tggtccccctgtgagtatcacccgcctctctgttgagcctctcccctctccccaggcagc


        .         .         .         .         .         .         .
      ggtggcaggtgagggcagctgggtcggatgagttggctgttctccctctgactgttccta


        .         .         .         .         .         .         .
      tgttctctccttccagggtgctactggtttccctggtgctgctggccg




      Exon 37 | Start: 16728 | End: 16781 | Length: 53
      BE AWARE: This section overlaps with the following exon



      .         .         .         .         .         .         .
      tgtttcccacccaagcatcttcctgcctccattactgctcctcccccaggtagtggaaac


      .         .         .         .         .         .         .
      tcctgcctccttccctccattcaccgccctgcttcctcccccagggtgctgacggccaac


      .         .         .         .         .         .         .
      ctggtgctaaaggcgaacctggtgatgctggtgctaaaggcgatgctggtccccctggcc
```

35

```
     .         .         .         .         .         .         .         .         .         .         .         .
ctgccggacccgctggaccccctggcccattgtgagtggcttggccctctgtgcccacg

     .         .         .         .         .         .         .         .         .         .         .         .
aggctggtgggctgggacccaggacgggtccaggcttgatgcctctgtgctctcctacag

 |2561      |2571      |2581      |2591      |2601      |2611    .
GGTAATGTTGGTGCTCCTGGAGCCAAAGGTGCTCGCGGCAGCGCTGGTCCCCCTgtgagt
G  N  V  G  A  P  G  A  K  G  A  R  G  S  A  G  P  P
                        |861                              |871

     .         .         .         .         .         .         .         .         .         .         .         .
atcacccgcctctctgttgagcctctcccctctccccaggcagcggtggcaggtgagggc

     .         .         .         .         .         .         .         .         .         .         .         .
agctgggtcggatgagttggctgttctccctctgactgttcctatgttctctccttccag

     .         .         .         .         .         .         .         .         .         .         .         .
ggtgctactggtttccctggtgctgctggccgagtcggtcctcctggcccctctgtaagt

     .         .         .         .         .         .         .         .         .         .         .         .
ctctgcagcagagtccactgctctaggttggggggtgctgggtgggggctgccagaaggat

     .         .         .         .         .         .         .         .         .         .         .         .
ggtggggctgactgaggacccaatgatgcaccagagccccctggagtctgacag


Exon 38 | Start: 16908 | End: 16961 | Length: 53
BE AWARE: This section overlaps with the following exon


     .         .         .         .         .         .         .         .         .         .         .         .
ctgccggacccgctggaccccctggcccattgtgagtggcttggccctctgtgcccacg

     .         .         .         .         .         .         .         .         .         .         .         .
aggctggtgggctgggacccaggacgggtccaggcttgatgcctctgtgctctcctacag

     .         .         .         .         .         .         .         .         .         .         .         .
ggtaatgttggtgctcctggagccaaaggtgctcgcggcagcgctggtccccctgtgagt

     .         .         .         .         .         .         .         .         .         .         .         .
atcacccgcctctctgttgagcctctcccctctccccaggcagcggtggcaggtgagggc
```

36

```
       .       .       .       .       .       .       .       .       .       .       .       .
     agctgggtcggatgagttggctgttctccctctgactgttcctatgttctctccttccag

            |2621      |2631      |2641      |2651      |2661          .
     GGTGCTACTGGTTTCCCTGGTGCTGCTGGCCGAGTCGGTCCTCCTGGCCCCTCTgtaagt
     G   A   T   G   F   P   G   A   A   G   R   V   G   P   P   G   P   S
                                            |881


       .       .       .       .       .       .       .       .       .       .       .       .
     ctctgcagcagagtccactgctctaggttggggggtgctgggtgggggctgccagaaggat

       .       .       .       .       .       .       .       .       .       .       .       .
     ggtggggctgactgaggacccaatgatgcaccagagccccctggagtctgacagcccctc

       .       .       .       .       .       .       .       .       .       .       .       .
     ctatcctcatccagggaaatgctggaccccctggccctcctggtcctgctggcaaagaag

       .       .       .       .       .       .       .       .       .       .       .       .
     gcggcaaaggtccccgtggtgagactggccctgctggacgtcctggtgaagttggtcccc

       .       .       .       .       .       .       .       .       .       .       .       .
     ctggtccccctggccctgctggcgagaaaggatcccctggtgctgatggtcctg



     Exon 39 | Start: 17102 | End: 17263 | Length: 161
     BE AWARE: This section overlaps with the following exon



       .       .       .       .       .       .       .       .       .       .       .       .
     tgttgagcctctcccctctccccaggcagcggtggcaggtgagggcagctgggtcggatg

       .       .       .       .       .       .       .       .       .       .       .       .
     agttggctgttctccctctgactgttcctatgttctctccttccagggtgctactggttt

       .       .       .       .       .       .       .       .       .       .       .       .
     ccctggtgctgctggccgagtcggtcctcctggcccctctgtaagtctctgcagcagagt

       .       .       .       .       .       .       .       .       .       .       .       .
     ccactgctctaggttggggggtgctgggtgggggctgccagaaggatggtggggctgactg

       .       .       .       .       .       .       .       .       .       .       .       .
     aggacccaatgatgcaccagagccccctggagtctgacagcccctcctatcctcatccag

            |2671      |2681      |2691      |2701      |2711      |2721
```

37

```
GGAAATGCTGGACCCCCTGGCCCTCCTGGTCCTGCTGGCAAAGAAGGCGGCAAAGGTCCC
G   N   A   G   P   P   G   P   P   G   P   A   G   K   E   G   G   K   G   P
    |891                                         |901

    |2731        |2741        |2751        |2761        |2771        |2781
CGTGGTGAGACTGGCCCTGCTGGACGTCCTGGTGAAGTTGGTCCCCCTGGTCCCCCTGGC
R   G   E   T   G   P   A   G   R   P   G   E   V   G   P   P   G   P   P   G
    |911                                         |921

    |2791        |2801        |2811        |2821         .       .       .
CCTGCTGGCGAGAAAGGATCCCCTGGTGCTGATGGTCCTGCTgtaagtgccagctcagat
P   A   G   E   K   G   S   P   G   A   D   G   P   A
    |931                                         |941


    .       .       .       .       .       .       .       .       .       .       .       .
ctctgcagctccggaggtgtgcagagctggggagggggtccctgtgctgctctctggcacc


    .       .       .       .       .       .       .       .       .       .       .       .
tcacccctgtttgcctcccaaagggtgctcctggtactcccgggcctcaaggtattgctg


    .       .       .       .       .       .       .       .       .       .       .       .
gacagcgtggtgtggtcggcctgcctggtcagagaggagagagaggcttccctggtcttc


    .       .       .       .       .       .       .       .       .       .       .       .
ctggcccctctgtaagtgcccccctcaccttggggggccctgagaaaaaccatcacagga


    .       .       .       .       .       .       .       .       .
cttggagtggggcggagccaaggagaacagatttggtagaga



Exon 40 | Start: 17365 | End: 17472 | Length: 107
BE AWARE: This section overlaps with the following exon



    .       .       .       .       .       .       .       .       .       .       .       .
cccctggagtctgacagcccctcctatcctcatccagggaaatgctggaccccctggccc


    .       .       .       .       .       .       .       .       .       .       .       .
tcctggtcctgctggcaaagaaggcggcaaaggtccccgtggtgagactggccctgctgg


    .       .       .       .       .       .       .       .       .       .       .       .
acgtcctggtgaagttggtccccctggtcccctggccctgctggcgagaaaggatcccc


    .       .       .       .       .       .       .       .       .       .       .       .
```

```
tggtgctgatggtcctgctgtaagtgccagctcagatctctgcagctccggaggtgtgca

    .      .      .      .      .      .      .      .      .      .
gagctggggaggggtccctgtgctgctctctggcacctcacccctgtttgcctcccaaag

 |2831      |2841      |2851      |2861      |2871      |2881
GGTGCTCCTGGTACTCCCGGGCCTCAAGGTATTGCTGGACAGCGTGGTGTGGTCGGCCTG
G   A   P   G   T   P   G   P   Q   G   I   A   G   Q   R   G   V   V   G   L
                          |951                              |961

 |2891      |2901      |2911      |2921      |2931         .      .
CCTGGTCAGAGAGGAGAGAGAGGCTTCCCTGGTCTTCCTGGCCCCTCTgtaagtgccccc
P   G   Q   R   G   E   R   G   F   P   G   L   P   G   P   S
                          |971

        .      .      .      .      .      .      .      .      .      .
ctcaccttggggggccctgagaaaaaccatcacaggacttggagtggggcggagccaagg

        .      .      .      .      .      .      .      .      .      .
agaacagatttggtagagatgactccagcggactcaagggtcctcccagaccctatctct

        .      .      .      .      .      .      .      .      .      .
ggcctgactctttcttctcccttagggtgaacctggcaaacaaggtccctctggagcaag

        .      .      .      .      .      .      .      .      .      .
tggtgaacgtggtccccctggtcccatgggcccccctggattggctggaccccctggtga

        .      .      .      .      .      .      .      .      .      .
atctggacgtgaggtgagcagtccccagcccccatgccagtaccctca
```

Exon 41 | Start: 17630 | End: 17737 | Length: 107
BE AWARE: This section overlaps with the following exon

```
        .      .      .      .      .      .      .      .      .      .
ctctctggcacctcacccctgtttgcctcccaaagggtgctcctggtactcccgggcctc

        .      .      .      .      .      .      .      .      .      .
aaggtattgctggacagcgtggtgtggtcggcctgcctggtcagagaggagagagaggct

        .      .      .      .      .      .      .      .      .      .
tccctggtcttcctggcccctctgtaagtgcccccctcaccttggggggccctgagaaaa
```

```
     .         .         .         .         .         .         .         .         .         .         .         .
     accatcacaggacttggagtggggcggagccaaggagaacagatttggtagagatgactc

     .         .         .         .         .         .         .         .         .         .         .         .
     cagcggactcaagggtcctcccagaccctatctctggcctgactctttcttctcccttag

        |2941      |2951      |2961      |2971      |2981      |2991
     GGTGAACCTGGCAAACAAGGTCCCTCTGGAGCAAGTGGTGAACGTGGTCCCCCTGGTCCC
     G  E  P  G  K  Q  G  P  S  G  A  S  G  E  R  G  P  P  G  P
        |981                               |991

        |3001      |3011      |3021      |3031      |3041      .         .
     ATGGGCCCCCCTGGATTGGCTGGACCCCCTGGTGAATCTGGACGTGAGgtgagcagtccc
     M  G  P  P  G  L  A  G  P  P  G  E  S  G  R  E
        |1001                              |1011


        .         .         .         .         .         .         .         .         .         .         .
     cagcccccatgccagtaccctcagcatggccattgtggccttgcctaagccctcttcccc

        .         .         .         .         .         .         .         .         .         .         .
     ggctgactctcacttctctctctctctctctgcaggggggctcctggtgccgaaggttccc

        .         .         .         .         .         .         .         .         .         .         .
     ctggacgagacggttctcctggcgccaaggtaagatggcaacactccatgaccacagcct

        .         .         .         .         .         .         .         .         .         .         .
     tgtctgctgcttccctgccccatcctggcccttcacccggggctgacccatattcccctg

        .         .         .         .         .         .         .         .         .         .
     ctctccccgccagggtgaccgtggtgagaccggccccgctggacccccc




     Exon 42 | Start: 17845 | End: 17898 | Length: 53
     BE AWARE: This section overlaps with the following exon



        .         .         .         .         .         .         .         .         .         .         .
     agaacagatttggtagagatgactccagcggactcaagggtcctcccagaccctatctct

        .         .         .         .         .         .         .         .         .         .         .
     ggcctgactctttcttctcccttagggtgaacctggcaaacaaggtccctctggagcaag

        .         .         .         .         .         .         .         .         .         .         .
     tggtgaacgtggtccccctggtcccatgggcccccctggattggctggaccccctggtga
```

40

```
        .      .      .      .      .      .      .      .      .      .      .      .
        atctggacgtgaggtgagcagtccccagcccccatgccagtaccctcagcatggccattg

        .      .      .      .      .      .      .      .      .      .      .      .
        tggccttgcctaagccctcttccccggctgactctcacttctctctctctctctctgcag

           |3051    |3061    |3071    |3081    |3091              .
        GGGGCTCCTGGTGCCGAAGGTTCCCCTGGACGAGACGGTTCTCCTGGCGCCAAGgtaaga
        G   A   P   G   A   E   G   S   P   G   R   D   G   S   P   G   A   K
                    |1021                                    |1031


           .      .      .      .      .      .      .      .      .      .      .      .
        tggcaacactccatgaccacagccttgtctgctgcttccctgccccatcctggcccttca

           .      .      .      .      .      .      .      .      .      .      .      .
        cccgggggctgacccatattcccctgctctccccgccagggtgaccgtggtgagaccggcc

           .      .      .      .      .      .      .      .      .      .      .      .
        ccgctggaccccctggtgctcctggtgctcctggtgcccctggccccgttggccctgctg

           .      .      .      .      .      .      .      .      .      .      .      .
        gcaagagtggtgatcgtggtgagactgtaagtagctgggctccagttccctgtacctggt

           .      .      .      .      .      .      .      .      .      .      .      .
        caggccagggactcttcaggcctccttagaggcctggggatgggtgtcggactt



Exon 43 | Start: 18003 | End: 18110 | Length: 107


           .      .      .      .      .      .      .      .      .      .      .      .
        gattggctggaccccctggtgaatctggacgtgaggtgagcagtccccagcccccatgcc

           .      .      .      .      .      .      .      .      .      .      .      .
        agtaccctcagcatggccattgtggccttgcctaagccctcttccccggctgactctcac

           .      .      .      .      .      .      .      .      .      .      .      .
        ttctctctctctctctctgcaggggggctcctggtgccgaaggttcccctggacgagacgg

           .      .      .      .      .      .      .      .      .      .      .      .
        ttctcctggcgccaaggtaagatggcaacactccatgaccacagccttgtctgctgcttc

           .      .      .      .      .      .      .      .      .      .      .      .
```

41

```
cctgccccatcctggcccttcacccggggctgacccatattcccctgctctccccgccag

 |3101     |3111     |3121     |3131     |3141     |3151
GGTGACCGTGGTGAGACCGGCCCCGCTGGACCCCCTGGTGCTCCTGGTGCTCCTGGTGCC
G   D   R   G   E   T   G   P   A   G   P   P   G   A   P   G   A   P   G   A
                      |1041                               |1051

 |3161     |3171     |3181     |3191     |3201        .        .
CCTGGCCCCGTTGGCCCTGCTGGCAAGAGTGGTGATCGTGGTGAGACTgtaagtagctgg
P   G   P   V   G   P   A   G   K   S   G   D   R   G   E   T
                      |1061


     .        .        .        .        .        .        .        .        .        .        .        .
gctccagttccctgtacctggtcaggccagggactcttcaggcctccttagaggcctggg

     .        .        .        .        .        .        .        .        .        .        .        .
gatgggtgtcggacttcacccaggcaggggggaggaaaggagatcctgcaagatgtcaggg

     .        .        .        .        .        .        .        .        .        .        .        .
ccttaatccaaaaaactgagttaaagctcagccccaagtcccctctcccagacaggaccg

     .        .        .        .        .        .        .        .        .        .        .        .
cctctcccatgagttggccccagctcccgtgaagattgcagtggggaggtttccctggga

     .        .        .        .        .        .        .        .        .        .
gttgggagagatggccacagtgggaagcagctgaggagagagagatcc



Exon 44 | Start: 18491 | End: 18544 | Length: 53
BE AWARE: This section overlaps with the following exon



     .        .        .        .        .        .        .        .        .        .        .        .
tcggacttcacccaggcaggggggaggaaaggagatcctgcaagatgtcagggccttaatc

     .        .        .        .        .        .        .        .        .        .        .        .
caaaaaactgagttaaagctcagccccaagtcccctctcccagacaggaccgcctctccc

     .        .        .        .        .        .        .        .        .        .        .        .
atgagttggccccagctcccgtgaagattgcagtggggaggtttccctgggagttgggag

     .        .        .        .        .        .        .        .        .        .        .        .
agatggccacagtgggaagcagctgaggagagagagatccagcagaggggaggcctcatc
```

```
     .         .         .         .         .         .         .         .         .         .         .         .
  ctgcagccccagcctcagccttccctggccaagagctcatgctttccttgctctccccag

     |3211      |3221      |3231      |3241      |3251      |3261.
  GGTCCTGCTGGTCCCGCCGGTCCTGTCGGCCCTGTTGGCGCCCGTGGCCCCGCCgtaagt
  G   P   A   G   P   A   G   P   V   G   P   V   G   A   R   G   P   A
     |1071                                        |1081


     .         .         .         .         .         .         .         .         .         .         .         .
  accctgctgtgtcccccatgcctttagaactctacagatgcagacagtgccccactcgat

     .         .         .         .         .         .         .         .         .         .         .         .
  gccaatggaacttccgcctgacagtttgtccctttctctcttctagggaccccaaggccc

     .         .         .         .         .         .         .         .         .         .         .         .
  ccgtggtgacaagggtgagacaggcgaacagggcgacagaggcataaagggtcaccgtgg

     .         .         .         .         .         .         .         .         .         .         .         .
  cttctctggcctccagggtccccctggccctcctgtaagtatgctcagcccctccccagt

     .         .         .         .         .         .         .         .         .         .         .         .
  ccccatgctgtgctgtgggataggaggggggagcttcgcctcagtttccccctct



  Exon 45 | Start: 18657 | End: 18764 | Length: 107



     .         .         .         .         .         .         .         .         .         .         .         .
  ctgggagttgggagagatggccacagtgggaagcagctgaggagagagagatccagcaga

     .         .         .         .         .         .         .         .         .         .         .         .
  ggggaggcctcatcctgcagccccagcctcagccttccctggccaagagctcatgctttc

     .         .         .         .         .         .         .         .         .         .         .         .
  cttgctctccccagggtcctgctggtcccgccggtcctgtcggccctgttggcgcccgtg

     .         .         .         .         .         .         .         .         .         .         .         .
  gccccgccgtaagtaccctgctgtgtcccccatgcctttagaactctacagatgcagaca

     .         .         .         .         .         .         .         .         .         .         .         .
  gtgccccactcgatgccaatggaacttccgcctgacagtttgtccctttctctcttctag

            |3271      |3281      |3291      |3301      |3311      |3321
  GGACCCCAAGGCCCCCGTGGTGACAAGGGTGAGACAGGCGAACAGGGCGACAGAGGCATA
```

43

```
        G   P   Q   G   P   R   G   D   K   G   E   T   G   E   Q   G   D   R   G   I
            |1091                                        |1101

            |3331        |3341        |3351        |3361            .       .
AAGGGTCACCGTGGCTTCTCTGGCCTCCAGGGTCCCCCTGGCCCTCCTgtaagtatgctc
K   G   H   R   G   F   S   G   L   Q   G   P   P   G   P   P
            |1111                                        |1121


        .       .       .       .       .       .       .       .       .       .       .
    agcccctccccagtccccatgctgtgctgtgggataggaggggggagcttcgcctcagtttt


        .       .       .       .       .       .       .       .       .       .       .
    ccccctctggatagtcattctttcccctccctagtggggactggggtctgaagatttgtg


        .       .       .       .       .       .       .       .       .       .       .
    ggcatgtccaagtagcttctgagagggtgaggggtacacagagagggattatgggagagg


        .       .       .       .       .       .       .       .       .       .       .
    tctctgcctatggacaccctcgggctagatttccagaataatgaaggggcatgggttgcc


        .       .       .       .       .       .       .       .       .       .       .
    cacactgcccttgtctctccagccaggccctcaggctacatttgacgc



Exon 46 | Start: 19103 | End: 19156 | Length: 53



        .       .       .       .       .       .       .       .       .       .       .
    ctgtgggataggaggggggagcttcgcctcagtttccccctctggatagtcattctttccc


        .       .       .       .       .       .       .       .       .       .       .
    ctccctagtggggactggggtctgaagatttgtgggcatgtccaagtagcttctgagagg


        .       .       .       .       .       .       .       .       .       .       .
    gtgaggggtacacagagagggattatgggagaggtctctgcctatggacaccctcgggct


        .       .       .       .       .       .       .       .       .       .       .
    agatttccagaataatgaaggggcatgggttgcccacactgcccttgtctctccagccag


        .       .       .       .       .       .       .       .       .       .       .
    gccctcaggctacatttgacgctcactgggcctgaactgcctttttttatctgtccttcag

        |3371        |3381        |3391        |3401        |3411        |3421    .
    GGCTCTCCTGGTGAACAAGGTCCCTCTGGAGCCTCTGGTCCTGCTGGTCCCCGAgtaagt
```

44

```
        G   S   P   G   E   Q   G   P   S   G   A   S   G   P   A   G   P   R
                            |1131                               |1141


        .       .       .       .       .       .       .       .       .       .
    catgccttctctctcctcttcctgagccccaagcccaggctcacctcggggacccttgcc


        .       .       .       .       .       .       .       .       .       .
    agggacccaggcaccctttgcctctctggagaagggttcagggacagggagtgggcaaag


        .       .       .       .       .       .       .       .       .       .
    agaggaagaatcctgaacaaacaatctgatctagctttggcctctctgctccccaatccg


        .       .       .       .       .       .       .       .       .       .
    tcctcccctggctcagcggctgggaggagctatggcatgtcctatggaaagaggctgagg


        .       .       .       .       .       .       .       .       .       .
    ctggctctatgagccgtggggccagagccagcagggagggtggtgggcctctcc




    Exon 47 | Start: 19518 | End: 19625 | Length: 107
    BE AWARE: This section overlaps with the following exon



        .       .       .       .       .       .       .       .       .       .
    ttgccagggacccaggcaccctttgcctctctggagaagggttcagggacagggagtggg


        .       .       .       .       .       .       .       .       .       .
    caaagagaggaagaatcctgaacaaacaatctgatctagctttggcctctctgctcccca


        .       .       .       .       .       .       .       .       .       .
    atccgtcctcccctggctcagcggctgggaggagctatggcatgtcctatggaaagaggc


        .       .       .       .       .       .       .       .       .       .
    tgaggctggctctatgagccgtggggccagagccagcagggagggtggtgggcctctcct


        .       .       .       .       .       .       .       .       .       .
    ccagagctggggttgttcgggcttctggcagcctttctcaaaccatttcccccactccag

            |3431      |3441      |3451      |3461      |3471      |3481
    GGTCCCCCTGGCTCTGCTGGTGCTCCTGGCAAAGATGGACTCAACGGTCTCCCTGGCCCC
    G   P   P   G   S   A   G   A   P   G   K   D   G   L   N   G   L   P   G   P
                                        |1151                              |1161


            |3491      |3501      |3511      |3521      |3531.      .
```

45

```
ATTGGGCCCCCTGGTCCTCGCGGTCGCACTGGTGATGCTGGTCCTGTTgtatgtagcccc
I   G   P   P   G   P   R   G   R   T   G   D   A   G   P   V
                                          |1171


    .       .       .       .       .       .       .       .       .       .       .       .
tcatccctctgctcatggccctccagcccccaaagcacttggatgccggtaatccccac


    .       .       .       .       .       .       .       .       .       .       .       .
tctcttccctctctgtgcagggtcccccggccctcctggacctcctggtccccctggtc


    .       .       .       .       .       .       .       .       .       .       .       .
ctcccagcgctggtttcgacttcagcttcctgccccagccacctcaagagaaggctcacg


    .       .       .       .       .       .       .       .       .       .       .       .
atggtggccgctactaccgggctgatgatgccaatgtggttcgtgaccgtgacctcgagg


    .       .       .       .       .       .       .       .       .       .       .       .
tggacaccaccctcaagagcctgagccagcagatcgagaacatccgga




Exon 48 | Start: 19718 | End: 20000 | Length: 282
BE AWARE: This section overlaps with the following exon



    .       .       .       .       .       .       .       .       .       .       .       .
gtggggccagagccagcagggagggtggtgggcctctcctccagagctggggttgttcgg


    .       .       .       .       .       .       .       .       .       .       .       .
gcttctggcagcctttctcaaaccatttcccccactccagggtcccccctggctctgctgg


    .       .       .       .       .       .       .       .       .       .       .       .
tgctcctggcaaagatggactcaacggtctccctggccccattgggcccccctggtcctcg


    .       .       .       .       .       .       .       .       .       .       .       .
cggtcgcactggtgatgctggtcctgttgtatgtagcccctcatccctctgctcatggc


    .       .       .       .       .       .       .       .       .       .       .       .
cctccagccccaaagcacttggatgccggtaatccccactctcttccctctctgtgcag

          |3541      |3551      |3561      |3571      |3581      |3591
GGTCCCCCCGGCCCTCCTGGACCTCCTGGTCCCCCTGGTCCTCCCAGCGCTGGTTTCGAC
G   P   P   G   P   P   G   P   P   G   P   P   G   P   P   S   A   G   F   D
          |1181                              |1191
```

46

```
        |3601      |3611      |3621      |3631      |3641      |3651
TTCAGCTTCCTGCCCCAGCCACCTCAAGAGAAGGCTCACGATGGTGGCCGCTACTACCGG
 F  S  F  L  P  Q  P  P  Q  E  K  A  H  D  G  G  R  Y  Y  R
        |1201                              |1211

        |3661      |3671      |3681      |3691      |3701      |3711
GCTGATGATGCCAATGTGGTTCGTGACCGTGACCTCGAGGTGGACACCACCCTCAAGAGC
 A  D  D  A  N  V  V  R  D  R  D  L  E  V  D  T  T  L  K  S
        |1221                              |1231

        |3721      |3731      |3741      |3751      |3761      |3771
CTGAGCCAGCAGATCGAGAACATCCGGAGCCCAGAGGGCAGCCGCAAGAACCCCGCCCGC
 L  S  Q  Q  I  E  N  I  R  S  P  E  G  S  R  K  N  P  A  R
        |1241                              |1251

        |3781      |3791      |3801      |3811      .    .    .
ACCTGCCGTGACCTCAAGATGTGCCACTCTGACTGGAAGAGTGgtgagggcctgccctag
 T  C  R  D  L  K  M  C  H  S  D  W  K  S  G
        |1261                              |1271


     .    .    .    .    .    .    .    .    .    .    .    .
cctctccctccctcctactcctgccatgccagggtccccatgcccatatgtgcccctacc

     .    .    .    .    .    .    .    .    .    .    .    .
atatggtgctggctgctccctttccctgactccatcttgccctgccctaccacaggagag

     .    .    .    .    .    .    .    .    .    .    .    .
tactggattgaccccaaccaaggctgcaacctggatgccatcaaagtcttctgcaacatg

     .    .    .    .    .    .    .    .    .    .    .    .
gagactggtgagacctgcgtgtacccactcagcccagtgtggcccagaagaactggtac

     .    .    .    .    .    .    .    .    .    .
atcagcaagaaccccaaggacaagaggcatgtctggttcggcg



Exon 49 | Start: 20133 | End: 20323 | Length: 190
BE AWARE: This section overlaps with the following exon



.    .    .    .    .    .    .    .    .    .    .    .
accgggctgatgatgccaatgtggttcgtgaccgtgacctcgaggtggacaccaccctca

.    .    .    .    .    .    .    .    .    .    .    .
```

```
agagcctgagccagcagatcgagaacatccggagcccagagggcagccgcaagaacccg

      .         .         .         .         .         .
cccgcacctgccgtgacctcaagatgtgccactctgactggaagagtggtgagggcctgc

      .         .         .         .         .         .
cctagcctctccctccctcctactcctgccatgccagggtccccatgcccatatgtgccc

      .         .         .         .         .         .
ctaccatatggtgctggctgctccctttccctgactccatcttgccctgccctaccacag

       |3821      |3831      |3841      |3851      |3861      |3871
GAGAGTACTGGATTGACCCCAACCAAGGCTGCAACCTGGATGCCATCAAAGTCTTCTGCA
   E   Y   W   I   D   P   N   Q   G   C   N   L   D   A   I   K   V   F   C   N
                                         |1281                            |1291

       |3881      |3891      |3901      |3911      |3921      |3931
ACATGGAGACTGGTGAGACCTGCGTGTACCCCACTCAGCCCAGTGTGGCCCAGAAGAACT
   M   E   T   G   E   T   C   V   Y   P   T   Q   P   S   V   A   Q   K   N   W
                                         |1301                            |1311

       |3941      |3951      |3961      |3971      |3981      |3991
GGTACATCAGCAAGAACCCCAAGGACAAGAGGCATGTCTGGTTCGGCGAGAGCATGACCG
   Y   I   S   K   N   P   K   D   K   R   H   V   W   F   G   E   S   M   T   D
                                         |1321                            |1331

       |4001      .         .         .         .         .         .
ATGGATTCCAGgtgcgtgagctggacctcagagccagtgttaggagatgggctagcccag
   G   F   Q


      .         .         .         .         .         .
tgctcagaagggacatgaagtcctggagtaggtctctgctaagggtgatggacagagctg

      .         .         .         .         .         .
ggctgggaggcaggggtctcaggtccctgatagtggttcagacacaggctgccgatgggc

      .         .         .         .         .         .
aggtggtgcctcctctcgatataacggtgcattgggcagctctctgaggaccctggacag

      .         .         .         .         .         .
ggaggccaggcaggactagaggttcccgcatagcggctcactcttccctctctcccctcc

      .         .         .
cctgcagttcg
```

Exon 50 | Start: 20620 | End: 20862 | Length: 242
BE AWARE: This section overlaps with the following exon


```
      .         .         .         .         .         .         .
ccaggtgcgtgagctggacctcagagccagtgttaggagatgggctagcccagtgctcag

      .         .         .         .         .         .         .
aagggacatgaagtcctggagtaggtctctgctaagggtgatggacagagctgggctggg

      .         .         .         .         .         .         .
aggcaggggtctcaggtccctgatagtggttcagacacaggctgccgatgggcaggtggt

      .         .         .         .         .         .         .
gcctcctctcgatataacggtgcattgggcagctctctgaggaccctggacagggaggcc

      .         .         .         .         .         .         .
aggcaggactagaggttcccgcatagcggctcactcttccctctctcccctcccctgcag

     |4011      |4021      |4031      |4041      |4051      |4061
TTCGAGTATGGCGGCCAGGGCTCCGACCCTGCCGATGTGGCCATCCAGCTGACCTTCCTG
F   E   Y   G   G   Q   G   S   D   P   A   D   V   A   I   Q   L   T   F   L
                |1341                            |1351

     |4071      |4081      |4091      |4101      |4111      |4121
CGCCTGATGTCCACCGAGGCCTCCCAGAACATCACCTACCACTGCAAGAACAGCGTGGCC
R   L   M   S   T   E   A   S   Q   N   I   T   Y   H   C   K   N   S   V   A
                |1361                            |1371

     |4131      |4141      |4151      |4161      |4171      |4181
TACATGGACCAGCAGACTGGCAACCTCAAGAAGGCCCTGCTCCTCCAGGGCTCCAACGAG
Y   M   D   Q   Q   T   G   N   L   K   K   A   L   L   L   Q   G   S   N   E
                |1381                            |1391

     |4191      |4201      |4211      |4221      |4231      |4241
ATCGAGATCCGCGCCGAGGGCAACAGCCGCTTCACCTACAGCGTCACTGTCGATGGCTGC
I   E   I   R   A   E   G   N   S   R   F   T   Y   S   V   T   V   D   G   C
                |1401                            |1411


              .         .         .         .         .         .         .
ACGgtgagtgcccagaatccccaggcagggccccacctctccggccttgggcttttttggc
T
```

49

```
        .         .         .         .         .         .         .
caggccatagtgccctctctccatcactcccacgtggtaatgccccctcccgttgtctcc

        .         .         .         .         .         .         .
gccccaccccagagtcacaccggagcctgggggcaagacagtgattgaatacaaaaccacc

        .         .         .         .         .         .         .
aagacctcccgcctgcccatcatcgatgtggccccccttggacgttggtgccccagaccag

        .         .         .         .         .         .         .
gaattcggcttcgacgttggccctgtctgcttcctgtaaactccctccatcccaacctgg

        .
ctc
```

Exon 51 | Start: 20992 | End: 22544 | Length: 1552

```
        .         .         .         .         .         .         .
accgaggcctcccagaacatcacctaccactgcaagaacagcgtggcctacatggaccag

        .         .         .         .         .         .         .
cagactggcaacctcaagaaggccctgctcctccagggctccaacgagatcgagatccgc

        .         .         .         .         .         .         .
gccgagggcaacagccgcttcacctacagcgtcactgtcgatggctgcacggtgagtgcc

        .         .         .         .         .         .         .
cagaatccccaggcagggcccacctctccggccttgggctttttggccaggccatagtg

        .         .         .         .         .         .         .
ccctctctccatcactcccacgtggtaatgccccctcccgttgtctccgccccaccccag

   |4251      |4261      |4271      |4281      |4291      |4301
AGTCACACCGGAGCCTGGGGCAAGACAGTGATTGAATACAAAACCACCAAGACCTCCCGC
S   H   T   G   A   W   G   K   T   V   I   E   Y   K   T   T   K   T   S   R
           |1421                                  |1431

   |4311      |4321      |4331      |4341      |4351      |4361
CTGCCCATCATCGATGTGGCCCCCCTTGGACGTTGGTGCCCCAGACCAGGAATTCGGCTTC
L   P   I   I   D   V   A   P   L   D   V   G   A   P   D   Q   E   F   G   F
           |1441                                  |1451
```

50

```
   |4371      |4381      |4391|+1        |+11       |+21       |+31
GACGTTGGCCCTGTCTGCTTCCTGTAAACTCCCTCCATCCCAACCTGGCTCCCTCCCACC
D   V   G   P   V   C   F   L   *
             |1461


      |+41       |+51       |+61       |+71       |+81       |+91
CAACCAACTTTCCCCCCAACCCGGAAACAGACAAGCAACCCAAACTGAACCCCCTCAAAA


      |+101      |+111      |+121      |+131      |+141      |+151
GCCAAAAAATGGGAGACAATTTCACATGGACTTTGGAAAATATTTTTTTCCTTTGCATTC


      |+161      |+171      |+181      |+191      |+201      |+211
ATCTCTCAAACTTAGTTTTTATCTTTGACCAACCGAACATGACCAAAAACCAAAAGTGCA


      |+221      |+231      |+241      |+251      |+261      |+271
TTCAACCTTACCAAAAAAAAAAAAAAAAAAAAAAGAATAAATAAATAACTTTTTAAAAAAGGA


      |+281      |+291      |+301      |+311      |+321      |+331
AGCTTGGTCCACTTGCTTGAAGACCCATGCGGGGGTAAGTCCCTTTCTGCCCGTTGGGCT


      |+341      |+351      |+361      |+371      |+381      |+391
TATGAAACCCCAATGCTGCCCTTTCTGCTCCTTTCTCCACACCCCCCTTGGGGCCTCCCC


      |+401      |+411      |+421      |+431      |+441      |+451
TCCACTCCTTCCCAAATCTGTCTCCCCAGAAGACACAGGAAACAATGTATTGTCTGCCCA


      |+461      |+471      |+481      |+491      |+501      |+511
GCAATCAAAGGCAATGCTCAAACACCCAAGTGGCCCCCACCCTCAGCCCGCTCCTGCCCG


      |+521      |+531      |+541      |+551      |+561      |+571
CCCAGCACCCCCAGGCCCTGGGGGACCTGGGGTTCTCAGACTGCCAAAGAAGCCTTGCCA


      |+581      |+591      |+601      |+611      |+621      |+631
TCTGGCGCTCCCATGGCTCTTGCAACATCTCCCCTTCGTTTTTGAGGGGGTCATGCCGGG


      |+641      |+651      |+661      |+671      |+681      |+691
GGAGCCACCAGCCCCTCACTGGGTTCGGAGGAGAGTCAGGAAGGGCCACGACAAAGCAGA


      |+701      |+711      |+721      |+731      |+741      |+751
AACATCGGATTTGGGGAACGCGTGTCAATCCCTTGTGCCGCAGGGCTGGGCGGGAGAGAC


      |+761      |+771      |+781      |+791      |+801      |+811
TGTTCTGTTCCTTGTGTAACTGTGTTGCTGAAAGACTACCTCGTTCTTGTCTTGATGTGT


      |+821      |+831      |+841      |+851      |+861      |+871
```

```
CACCGGGGCAACTGCCTGGGGGCGGGGATGGGGGCAGGGTGGAAGCGGCTCCCCATTTTA

        |+881      |+891      |+901      |+911      |+921      |+931
TACCAAAGGTGCTACATCTATGTGATGGGTGGGGTGGGGAGGGAATCACTGGTGCTATAG

        |+941      |+951      |+961      |+971      |+981      |+991
AAATTGAGATGCCCCCCCAGGCCAGCAAATGTTCCTTTTTGTTCAAAGTCTATTTTTATT

        |+1001     |+1011     |+1021     |+1031     |+1041     |+1051
CCTTGATATTTTTCTTTTTTTTTTTTTTTTTTTTGTGGATGGGGACTTGTGAATTTTTCTA

        |+1061     |+1071     |+1081     |+1091     |+1101     |+1111
AAGGTGCTATTTAACATGGGAGGAGAGCGTGTGCGGCTCCAGCCCAGCCCGCTGCTCACT

        |+1121     |+1131     |+1141     |+1151     |+1161     |+1171
TTCCACCCTCTCTCCACCTGCCTCTGGCTTCTCAGGCCTCTGCTCTCCGACCTCTCTCCT

        |+1181     |+1191     |+1201     |+1211     |+1221     |+1231
CTGAAACCCTCCTCCACAGCTGCAGCCCATCCTCCCGGCTCCCTCCTAGTCTGTCCTGCG

        |+1241     |+1251     |+1261     |+1271     |+1281     |+1291
TCCTCTGTCCCCGGGTTTCAGAGACAACTTCCCAAAGCACAAAGCAGTTTTTCCCCCTAG

        |+1301     |+1311     |+1321     |+1331     |+1341     |+1351
GGGTGGGAGGAAGCAAAAGACTCTGTACCTATTTTGTATGTGTATAATAATTTGAGATGT

        |+1361     |+1371     |+1381     |+1391     |+1401      .
TTTTAATTATTTTGATTGCTGGAATAAAGCATGTGGAAATGACCCAAACATAAtccgcag

     .         .         .         .         .         .         .
tggcctcctaatttccttctttggagttggggggaggggtagacatggggaaggggctttg

     .         .         .         .         .         .         .
gggtgatgggcttgccttccattcctgccctttccctccccactattctcttctagatcc

     .         .         .         .         .         .         .
ctccataaccccactcccctttctctcacccttcttataccgcaaacctttctacttcct

     .         .         .         .         .         .         .
ctttcattttctattcttgcaatttccttgcacctttttccaaatcctcttctcccctgca

     .         .         .         .         .         .         .
ataccatacaggcaatccacgtgcacaacacacacacacactcttcacatctg


LRG Parser: Version: 0.3, Version Date: 11/02/2015


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```

Reader: Version: 0.3, Version Date: 11/02/2015
Writer: Version: 0.3, Version Date: 11/02/2015
Control: Version: 0.3, Version Date: 11/02/2015