Gene: COL1A1 - Sequence: NG_007400.1
Transcript: NM_000088.3 - Protein: NP_000079.2
Date : February 19, 2015

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

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



.    .    .    .    .    .    .    .    .    .    .    .
agcagaggggcacccctacccactggttagcccacgccattctgaggacccagctgcacc

.    .    .    .    .    .    .    .    .    .    .    .
cctaccacagcacctctggcccaggctgggctgggggctggggaggcagagctgcgaag

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

.    .    .    .    .    .    .    .    .    .    .    .
attgggggccgggccaggcagctctgattggctggggcacgggcggccggctcccccctct

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

```
   .    .    .    .    .    .    .    .    .    .    .    .
actttgggagtgcaaggatactctatatcgcgccttgcgcttggtcccgggggccgcgg

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

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

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

   .    .    .    .    .    .    .    .    .    .
gcgcgcaaccggggaagtggggatctgggtgcagagtgaggaaagcacg
```

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

```
.    .    .    .    .    .    .    .    .    .    .    .
tttttatttcacttggcttcagcgccaatgggctgaggttggagttggaagccaccgcgg

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

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

.    .    .    .    .    .    .    .    .    .    .    .
aagaacgggggggaggggcgggaagtgaaaaatccaagtgtgcctcttagacccgggggaa

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

```
       |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

    .    .    .    .    .    .    .    .    .    .    .
ccgacgggagcagcattagcaaaccttggctctaacgcgcgtctcttcgtcccctag
```

Exon 3 | Start: 7050 | End: 7084 | Length: 34
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
tgcggctgcgctcggggcctggggcctggggcctggggcctggggcctggggctggggct

.    .    .    .    .    .    .    .    .    .    .    .
gggggtggtcggcgctcgctggccctccgtgctggaggcctctgccgacgggagcagcat

.    .    .    .    .    .    .    .    .  |301      |311
tagcaaaccttggctctaacgcgcgtctcttcgtcccctagAGTCACCCACCGACCAAGA
                                           S  P  T  D  Q  E
                                           |101

   |321      |331   .    .    .    .    .    .    .    .
AACCACCGGCGTCGAGgtaatctcctgccctcgaattttgcccctgcgcggcccgtgact
 T  T  G  V  E
            |111

.    .    .    .    .    .    .    .    .    .    .    .
cctcacagtcctcccttctctaacctggcctcttgtttcttctcccccaatcccacag
```

Exon 4 | Start: 7187 | End: 7222 | Length: 35

```
BE AWARE: This section overlaps with both adjacent exons



.    .    .    .    .    .    .    .    .    .    .    .
taatctcctgccctcgaattttgcccctgcgcggcccgtgactcctcacagtcctccctt

.    .    .    .    .    .    .    .    .       |341      |351
ctctaacctggcctcttgtttcttctcccccaatcccacagGGACCCAAGGGAGACACTG
                                          G  P  K  G  D  T  G


        |361         .    .    .    .    .    .    .    .
GCCCCCGAGGCCCAAGGgtaagcgttgcactctgggctgtgggggggctgcaggtgggcat
  P  R  G  P  R
        |121

 .    .    .    .    .    .    .    .    .    .
ggctctcggccccacgctcaccccggccccgccctctccccctgcag



Exon 5 | Start: 7313 | End: 7414 | Length: 101
BE AWARE: This section overlaps with the previous exon



.    .    .    .    .    .    .    .    .    .    .    .
taagcgttgcactctgggctgtgggggggctgcaggtgggcatggctctcggccccacgct

.    .    .    .    .    .    |371      |381      |391
caccccggccccgccctctcccccctgcagGGACCCGCAGGCCCCCCTGGCCGAGATGGCA
                             G  P  A  G  P  P  G  R  D  G  I
                                                   |131

|401      |411      |421      |431      |441      |451
TCCCTGGACAGCCTGGACTTCCCGGACCCCCCGGACCCCCCGGACCTCCCGGACCCCCTG
  P  G  Q  P  G  L  P  G  P  P  G  P  P  G  P  P  G  P  P  G
                   |141                        |151

|461      |471 .    .    .    .    .    .    .    .
GCCTCGGAGGAgtaagtggagaggccttgtgtgtccactctcccctgttttgtttttgtt
  L  G  G


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

```
ttttggcagatgacataattttatactttgaaataatttcaaacttacagaaaagttgca

.    .    .    .    .    .    .    .    .    .    .    .
agaatcctacaggaaactctcacataccttcacagtttgtgacatgtgctttattagtc

.    .    .    .    .    .    .    .    .    .    .    .
tctgtttatgtatatgtatctttttttttctgaactgtttgagcaagttgctaacatcag

.    .    .    .    .    .    .    .    .    .    .    .
gctctttgcgcctaaatacttaggtgtgtttttcctaaaaacaagagcattctcttaac

.    .    .
tgacctacaca
```

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   .    .    .    .    .    .    .    .    .
CCTGGCCCCATGgtgagccagcaggggagcatggatgacagaagagagaatgggtatcc
P  G  P  M
         |181
```

```
 .    .    .    .    .    .    .    .    .    .    .    .
agaggaggtgggcataggcggctggtatagacagcttgggaggtccagatcacctttggg

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

 .    .    .    .    .    .    .    .    .    .    .    .
catccacatgctttcctacagagggatcaccatgaccccctttcttctccctctatag
```

Exon 7 | Start: 8435 | End: 8479 | Length: 44
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
tgagccagcaggggagcatggatgacagaagagagaatgggtatccagaggaggtgggc

.    .    .    .    .    .    .    .    .    .    .    .
ataggcggctggtatagacagcttgggaggtccagatcacctttgggacctcagagtcca

.    .    .    .    .    .    .    .    .    .    .    .
gaaaggatgcaggacgactgggtggtcccaacaggcatgaatgactacatccacatgctt

.    .    .    .    .    .    .    .    .    .       |551
tcctacagagggatcaccatgacccccctttcttctccctctatagGGTCCCTCTGGTCC
                                                 G  P  S  G  P

   |561      |571      |581        .    .    .    .    .
TCGTGGTCTCCCTGGCCCCCCTGGTGCACCTgtgagtatccaggacgtcttcatatgcct
 R  G  L  P  G  P  P  G  A  P
             |191

.    .    .    .    .    .    .    .    .    .    .    .
ccttgggctttggtcttttggagggaagactgggatgagggcaggagagatgctcagaga

.    .    .    .    .    .    .    .    .    .    .    .
tctcttggtaagattggagaaggttgacagggacttgtcttctaacccatctttttcctt

.    .
cttctcaag
```

```
Exon 8 | Start: 8638 | End: 8691 | Length: 53
BE AWARE: This section overlaps with both adjacent exons



.    .    .    .    .    .    .    .    .    .    .    .
tgagtatccaggacgtcttcatatgcctccttgggctttggtcttttggagggaagactg

.    .    .    .    .    .    .    .    .    .    .    .
ggatgagggcaggagagatgctcagagatctcttggtaagattggagaaggttgacaggg

.    .    .    .    .    .    .    .   |591      |601      |611
acttgtcttctaacccatctttttccttcttctcaagGGTCCCCAAGGCTTCCAAGGTCC
                                      G  P  Q  G  F  Q  G  P
                                                |201

         |621      |631      |641  .    .    .    .    .
CCCTGGTGAGCCTGGCGAGCCTGGAGCTTCAgtaagcactctctatacagattcatactc
 P  G  E  P  G  E  P  G  A  S
                  |211

.    .    .    .    .    .    .    .    .    .    .    .
cttctacaaacacacagactctcctatagaagaactcccaggcctggggtcttccttacc

.    .    .    .    .    .    .    .    .    .    .    .
tcttcccttcaatcccagccttccccttctttttttcttatccatattctaaccacctct

.    .    .
tctatcttttctag



Exon 9 | Start: 8855 | End: 8908 | Length: 53
BE AWARE: This section overlaps with the previous exon



.    .    .    .    .    .    .    .    .    .    .    .
taagcactctctatacagattcatactccttctacaaacacacagactctcctatagaag

.    .    .    .    .    .    .    .    .    .    .    .
aactcccaggcctggggtcttccttacctcttcccttcaatcccagccttccccttcttt

.    .    .    .    .    .    .    .    .         |651
ttttcttatccatattctaaccacctcttctatcttttctagGGTCCCATGGGTCCCCGA
                                         G  P  M  G  P  R
```

```
|661      |671      |681      |691      .    .    .    .
GGTCCCCCAGGTCCCCCTGGAAAGAATGGAGATGATgtaagtatccccagcaagaagata
G  P  P  G  P  P  G  K  N  G  D  D
|221                          |231

.    .    .    .    .    .    .    .    .    .    .    .
ccatctgaccccatggcctccatgggttgggtcctgcaatttccactccaccacatttgg

.    .    .    .    .    .    .    .    .    .    .    .
gaacgatactcagaggaaggagggcaagtcctctctgatgcacggactgccctggaacaa

.    .    .    .    .    .    .    .    .    .    .    .
tgatcttttcgcttagtgagatgattccatgtccccaacaaagtgactgttctcctcacc

.    .    .    .    .    .    .    .    .    .    .    .
ccagccaccttagagcaatccccaaccccatccctttggggaaattggtgcgcagatggt

.    .    .    .    .    .    .    .
gaaattaaaatgctggtgacagaagtagacagaaat
```

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

```
.    .    .    .    .    .    .    .    .    .    .    .
ctcaccccagccaccttagagcaatccccaaccccatcccttggggaaattggtgcgca

.    .    .    .    .    .    .    .    .    .    .    .
gatggtgaaattaaaatgctggtgacagaagtagacagaaattcctttagaggcactcag

.    .    .    .    .    .    .    .    .    .    .    .
atttcaccaaacgaaggtttcactgtagatttaaactgagctctagattcaaagataaga

.    .    .    .    .    .    .    .    .    .    .    .
ttctgggcccccaaacctgacctgcaacaatccaaagaagactgagaccttctccacttt

.    .    .    .    .    .    .    .    .    .    .    .
tccagcccctaggcggtggtggggaggcagaggcatgatggtcttttctctccctctcag

    |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

   .     .     .     .     .     .     .     .     .     .
acagtgatgtgttctaatggcccttccttgtcttcttcatctctctccag
```

Exon 11 | Start: 9577 | End: 9630 | Length: 53
BE AWARE: This section overlaps with the previous exon

```
.     .     .     .     .     .     .     .     .     .     .
tgagcaggggctgtggctgaacctgggcttcactgcacttgggcttcatttaggagctg

.     .     .     .     .     .     .     .     .     .     |751
ggtccacagtgatgtgttctaatggcccttccttgtcttcttcatctctctccagGGTGC
                                                        G  A
                                                        |251

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

   .     .     .     .     .     .     .     .     .     .     .
ttgagtcatttaagctccccaagtccctagcataccccatccagtcccaacctcttccc

   .     .     .     .     .     .     .     .     .     .     .
caaaagatactgagttgcatcatggtgggtggcagctacagaagtcccaagggacagaga

   .     .     .     .     .     .     .     .     .     .     .
gtggacatccaaaagcacctccctccatgggaaagcagtcccgattaaacgattgggtga

   .     .     .     .     .     .     .     .     .     .     .
gatctagagccagttggggtttagtctagctcagaaacaaagggatggcggtgatgacct

   .     .     .     .     .     .     .     .     .     .
cccaaggctctttctcagatctaggtggatgtcaaggctgttccacccc
```

```
Exon 12 | Start: 9970 | End: 10023 | Length: 53
BE AWARE: This section overlaps with the following exon



.    .    .    .    .    .    .    .    .    .    .    .
agcatacccccatccagtcccaacctcttccccaaaagatactgagttgcatcatggtgg

.    .    .    .    .    .    .    .    .    .    .    .
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

   .    .    .    .
ctcattattctctgatctacag



Exon 13 | Start: 10112 | End: 10156 | Length: 44
BE AWARE: This section overlaps with both adjacent exons



.    .    .    .    .    .    .    .    .    .    .    .
taagaggctgtctgaacatcatggtcctccacatccccagagtcccaccatgaatgaatt

.    .    .    .    .    .   |861      |871      |881      |891
tctcactcattattctctgatctacagGGTGAGCCTGGCAGCCCTGGTGAAAATGGAGCT
                          G  E  P  G  S  P  G  E  N  G  A
                                     |291
```

```
         |901   .    .    .    .    .    .    .    .
CCTGGTCAGATGgtgagtgtgcccagttccagagggcagggatggggcaggaggcagggg
P  G  Q  M
         |301

 .    .    .    .    .    .    .    .    .    .    .    .
caagatggaggcctgggggaacaaggctgtctcccatctcatctgacttctcttggtttg

 .    .
gttgtcag
```

Exon 14 | Start: 10273 | End: 10326 | Length: 53
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
tgagtgtgcccagttccagagggcagggatggggcaggaggcaggggcaagatggaggcc

.    .    .    .    .    .    .    .    .    .    .
tgggggaacaaggctgtctcccatctcatctgacttctcttggtttggttgtcagGGCCC
                                                       G  P

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

   .    .    .    .    .    .    .    .    .    .    .    .
tggccccttgggggatccctgagctctggaaggggctccccaggaactctagggactggc

   .    .    .    .    .    .    .    .
cagtgctcagtggacttaacggggcttcccctctctcctgcag
```

Exon 15 | Start: 10441 | End: 10485 | Length: 44
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
taagtactcctggccccttgggggatccctgagctctggaaggggctccccaggaactct
```

```
.    .    .    .    .    .    .    .    .    .    .     |961
agggactggccagtgctcagtggacttaacggggcttcccctctcctgcagGGTGCTC
                                                     G  A  R
                                                        |321

      |971      |981      |991      |1001 .    .    .    .
GTGGAAATGATGGTGCTACTGGTGCTGCCGGGCCCCCTgtgagtgtggcctgtaggcctc
  G  N  D  G  A  T  G  A  A  G  P  P
                        |331

  .    .    .    .    .    .    .    .    .    .    .    .
agggcctgggagtggggaggggtctcagtatctgctcttggggctgacaatgggagcagg

  .    .    .    .    .    .    .    .    .    .    .    .
ttatgttggtctgaaccccaggacttcctctgtcccagggtgtgacttgcagctgccatc

  .    .    .    .    .    .    .
tcttccttctcgctgacatctccatttcattcacag



Exon 16 | Start: 10664 | End: 10717 | Length: 53
BE AWARE: This section overlaps with both adjacent exons



.    .    .    .    .    .    .    .    .    .    .    .
tgagtgtggcctgtaggcctcagggcctgggagtggggaggggtctcagtatctgctctt

.    .    .    .    .    .    .    .    .    .    .    .
ggggctgacaatgggagcaggttatgttggtctgaaccccaggacttcctctgtcccagg

.    .    .    .    .    .    .    .    .    .    .    .
gtgtgacttgcagctgccatctcttccttctcgctgacatctccatttcattcacagGGT
                                                        G


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

.    .    .    .    .    .    .    .    .    .    .    .
cccactctcctctaagcatgaccctcatgggccaaggggttcatgtctccctgttcccca
```

```
.    .    .    .    .    .    .    .    .    .    .    .
aaccaaagggacccagagtggcaagagagcagcccgttcactaacacctttgtcctgggt

.    .    .    .    .    .    .    .    .    .    .    .
tctccgtctctgatcttagagtcctgatcattgctctcctgtccctgtctccccttcctc

.    .    .    .    .    .    .    .    .    .    .    .
ctgccatcccgagaggcaaggttgggtttcccagggtggcttctgatatgtcctttcttc

.    .
tgattcag
```

Exon 17 | Start: 10975 | End: 11073 | Length: 98
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
tgagacccccccactctcctctaagcatgaccctcatgggccaaggggttcatgtctccct

.    .    .    .    .    .    .    .    .    .    .    .
gttccccaaaccaaagggacccagagtggcaagagagcagcccgttcactaacacctttg

.    .    .    .    .    .    .    .    .    .    .    .
tcctgggttctccgtctctgatcttagagtcctgatcattgctctcctgtccctgtctcc

.    .    .    .    .    .    .    .    .    .    .    .
ccttcctcctgccatcccgagaggcaaggttgggtttcccagggtggcttctgatatgtc

.    .    .    .    |1061     |1071     |1081     |1091
ctttcttctgattcagGGTGAAGCTGGTCCCCAAGGGCCCCGAGGCTCTGAAGGTCCCCA
               G  E  A  G  P  Q  G  P  R  G  S  E  G  P  Q
                                        |361

|1101     |1111     |1121     |1131     |1141     |1151    .
GGGTGTGCGTGGTGAGCCTGGCCCCCCTGGCCCTGCTGGTGCTGCTGGCCCTGCTgtaag
 G  V  R  G  E  P  G  P  P  G  P  A  G  A  A  G  P  A
          |371                          |381

    .    .    .    .    .    .    .    .    .    .    .    .
tgtccccgactcagtgtccccttgccactttctaacctcagagtccttgcctgttgctg

    .    .    .    .
acactcctttctctgtgccacag
```

```
Exon 18 | Start: 11162 | End: 11206 | Length: 44
BE AWARE: This section overlaps with both adjacent exons



.    .    .    .    .    .    .    .    .    .    .    .
taagtgtccccgactcagtgtccccttgccactttctaacctcagagtccttgcctgtt

.    .    .    .    .    .      |1161     |1171     |1181
gctgacactcctttctctgtgccacagGGAAACCCTGGTGCTGATGGACAGCCTGGTGCT
                          G  N  P  G  A  D  G  Q  P  G  A
                                         |391

  |1191         .    .    .    .    .    .    .    .    .
AAAGGTGCCAATgtaagtatcctgccaggcttcagtcccactcctgccgcctgcagcctg
K  G  A  N


 .    .    .    .    .    .    .    .    .    .    .
cctgccccttccctctgctcctaggctcacgccctggctgtctgcctcccacag



Exon 19 | Start: 11310 | End: 11408 | Length: 98
BE AWARE: This section overlaps with both adjacent exons



.    .    .    .    .    .    .    .    .    .    .    .
taagtatcctgccaggcttcagtcccactcctgccgcctgcagcctgcctgccccttcc

.    .    .    .    .    .    .    .    . |1201     |1211
ctctgctcctaggctcacgccctggctgtctgcctcccacagGGTGCTCCTGGTATTGCT
                                         G  A  P  G  I  A
                                         |401

  |1221     |1231     |1241     |1251     |1261     |1271
GGTGCTCCTGGCTTCCCTGGTGCCCGAGGCCCCTCTGGACCCCAGGGCCCCGGCGGCCCT
G  A  P  G  F  P  G  A  R  G  P  S  G  P  Q  G  P  G  G  P
           |411                          |421

  |1281     |1291         .    .    .    .    .    .    .
CCTGGTCCCAAGGGTAACAGCgtgagtaccaaactctcccttctgcccaccccatgcact
```

```
P  G  P  K  G  N  S
           |431

.    .    .    .    .    .    .    .    .    .    .    .
ggctccagtgcggctctcatctggggagcaggaagacgcaggccaactgagcgccccga

.    .    .    .    .    .    .
ctctcagctcatcctcttctccccccttgcag
```

Exon 20 | Start: 11540 | End: 11593 | Length: 53
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
tgagtaccaaactctcccttctgcccaccccatgcactggctccagtgcggctctcatct

.    .    .    .    .    .    .    .    .    .    .    .
ggggagcaggaagacgcaggccaactgagcgcccccgactctcagctcatcctcttctcc

.    .     |1301     |1311     |1321     |1331     |1341
ccccttgcagGGTGAACCTGGTGCTCCTGGCAGCAAAGGAGACACTGGTGCTAAGGGAGA
          G  E  P  G  A  P  G  S  K  G  D  T  G  A  K  G  E
                              |441

 |1351  .    .    .    .    .    .    .    .    .    .    .
GCCTgtaagtctccccgccatccttcttgcagcccagcccaccctgccctaggagccccc
 P
 |451

   .    .    .    .    .    .    .    .    .    .    .    .
tgagggaaatccagaaaggaagaggagcccctagtcttctgggggagtccctgccacacc

   .    .    .    .    .    .    .    .    .    .    .    .
cccaggaacccctgacactggaggcccagcctcagccggctctgaggctggcacaggatg

   .    .    .    .    .    .    .    .
gcccctcaccacaggccgcctcctcctctcggccctctccag
```

Exon 21 | Start: 11812 | End: 11919 | Length: 107
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
taagtctccccgccatccttcttgcagcccagcccaccctgccctaggagccccctgagg

.    .    .    .    .    .    .    .    .    .    .    .
gaaatccagaaaggaagaggagccccctagtcttctgggggagtccctgccacacccccag

.    .    .    .    .    .    .    .    .    .    .    .
gaacccctgacactggaggcccagcctcagccggctctgaggctggcacaggatggcccc

.    .    .    .    .    .    .    .        |1361     |1371
tcaccacaggccgcctcctcctctcggccctctccagGGCCCTGTTGGTGTTCAAGGACC
                                      G  P  V  G  V  Q  G  P


    |1381     |1391     |1401     |1411     |1421     |1431
CCCTGGCCCTGCTGGAGAGGAAGGAAAGCGAGGAGCTCGAGGTGAACCCGGACCCACTGG
 P  G  P  A  G  E  E  G  K  R  G  A  R  G  E  P  G  P  T  G
    |461                        |471

    |1441     |1451     |1461.    .    .    .    .    .    .
CCTGCCCGGACCCCCTGGCGAGCGTgtaagtgtccctgcccgccccctcccgctccaccc
 L  P  G  P  P  G  E  R
    |481

    .    .    .    .    .    .    .    .    .    .    .
tcattgcctggctggtgcctgtgtgtcgcggagttcactggcctcctctcctcctgcag



Exon 22 | Start: 12014 | End: 12067 | Length: 53
BE AWARE: This section overlaps with both adjacent exons



.    .    .    .    .    .    .    .    .    .    .    .
taagtgtccctgcccgccccctcccgctccaccctcattgcctggctggtgcctgtgtgt

.    .    .    .    .    .    .          |1471     |1481
cgcggagttcactggcctcctctcctcctgcagGGTGGACCTGGTAGCCGTGGTTTCCCT
                                 G  G  P  G  S  R  G  F  P
                                          |491

  |1491     |1501     |1511    .    .    .    .    .    .
GGCGCAGATGGTGTTGCTGGTCCCAAGgtaacctctccttgcggccgggggggctgaccct
```

```
G  A  D  G  V  A  G  P  K
            |501

 .    .    .    .    .    .    .    .    .    .    .    .
gccgctccctgggcatcttcttcctctttggcccgtggcaaagagccacaaacttgaga

 .    .    .    .    .    .    .
ccctaactgttcctgtgacttcccccaaccag
```

Exon 23 | Start: 12193 | End: 12291 | Length: 98
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
taacctctccttgcggccgggggggctgaccctgccgctccctgggcatcttcttcctctt

.    .    .    .    .    .    .    .    .    .    .    .
ttggcccgtggcaaagagccacaaacttgagaccctaactgttcctgtgacttcccccaa

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

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

  .    .    .    .    .    .    .    .    .    .    .    .
cagcctggcttggccaggccctgaccatcccgtgtagggtctgggatgaggcgttctgga

  .    .    .    .    .    .    .    .    .    .    .    .
tcaggcccaagggtctgccctctggagtcctcccccacctccatcatgcttctccccaag

  .    .    .    .    .    .
tcccactcatacctctctgcctccctag
```

Exon 24 | Start: 12457 | End: 12510 | Length: 53
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
tgaggccccaggctttcagcctggcttggccaggccctgaccatcccgtgtagggtctgg

.    .    .    .    .    .    .    .    .    .    .    .
gatgaggcgttctggatcaggcccaagggtctgccctctggagtcctcccccacctccat

.    .    .    .    .    .    .    .    .         |1621
catgcttctccccaagtcccactcatacctctctgcctccctagGGTCTGACTGGAAGCC
                                              G  L  T  G  S  P
                                                    |541

|1631     |1641     |1651     |1661       .    .    .    .
CTGGCAGCCCTGGTCCTGATGGCAAAACTGGCCCCCCTgtaagtatcactccccctgaac
  G  S  P  G  P  D  G  K  T  G  P  P
                   |551

  .    .    .    .    .    .    .    .    .    .    .    .
cccctgccattgtcctgtctgcctccctgctgtcctcactgctgctttcgtgcctcccat

  .
ccttag
```

Exon 25 | Start: 12599 | End: 12697 | Length: 98
BE AWARE: This section overlaps with the previous exon

```
.    .    .    .    .    .    .    .    .    .    .    .
taagtatcactccccctgaacccccctgccattgtcctgtctgcctccctgctgtcctcac

.    .    .    .    .    .   |1671     |1681     |1691     |1701
tgctgctttcgtgcctcccatccttagGGTCCCGCCGGTCAAGATGGTCGCCCCGGACCC
                          G  P  A  G  Q  D  G  R  P  G  P
                                      |561

         |1711     |1721     |1731     |1741     |1751     |1761
CCAGGCCCACCTGGTGCCCGTGGTCAGGCTGGTGTGATGGGATTCCCTGGACCTAAAGGT
P  G  P  P  G  A  R  G  Q  A  G  V  M  G  F  P  G  P  K  G
         |571                        |581

          .    .    .    .    .    .    .    .    .    .
GCTGCTgtgagtattaagtgaggatccatgaagagccagggacaaacacacctgagactt
```

```
A  A


.    .    .    .    .    .    .    .    .    .    .    .
gaaggagtcctgggctctgggctcagctgtgccgctgacctgccgtgtggccactcactc

.    .    .    .    .    .    .    .    .    .    .    .
tcactttctggacctcagcctccctatctgtaaaatgaaagacttctcggcggggcacgg

.    .    .    .    .    .    .    .    .    .    .    .
tggctcatgcctgtaatcccagcactttgggaggccaaggcgggcagaccatgaggtcag

.    .    .    .    .    .    .    .    .    .    .    .
gagtttgagaccagtcgggccaacatagtgaaaccacgtctctactaaaaatacaaaaga

.    .
ttagct


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

   .    .    .
ttgctctctccctgcag
```

Exon 27 | Start: 13790 | End: 13843 | Length: 53
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
taagtatctcctttccatccctacctccttcccattgctgccccggcactttctcctccc

.    .    .    .    .    .    .    .    .    .    .    .
tgcaggaggggtgctagaggccacggtcctcagctgctcggggcctcctaaccctgagtt

.    .    .    .    .          |1831     |1841     |1851
ccccttttgctctctccctgcagGGTCCTGCTGGCAAAGATGGAGAGGCTGGAGCTCAGGG
                     G  P  A  G  K  D  G  E  A  G  A  Q  G
                              |611

 |1861     |1871    .    .    .    .    .    .    .    .
ACCCCCTGGCCCTGCTgtgagtgtccctgatggggagatctggggagcagaaaaggggag
 P  P  G  P  A
 |621

.    .    .    .    .    .    .    .    .    .    .    .
acaccctcagcccctcgtctcctcggcctccccgtgactgtagtgttctctctgtgcag
```

Exon 28 | Start: 13947 | End: 14000 | Length: 53
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
tgagtgtccctgatggggagatctggggagcagaaaaggggagacaccctcagcccctcg

.    .    .    .    .    .    .    .    .      |1881     |1891
tctcctcggcctccccgtgactgtagtgttctctctgtgcagGGTCCCGCTGGCGAGAGA
```

```
                                                G  P  A  G  E  R
                                                                |631

       |1901     |1911     |1921        .    .    .    .
GGTGAACAAGGCCCTGCTGGCTCCCCCGGATTCCAGgtgaggcctcatggctgtcaggat
G  E  Q  G  P  A  G  S  P  G  F  Q
                           |641

.    .    .    .    .    .    .    .    .    .    .    .
gctgggaggtaggggtaggaaacacctctttggtctcttccagattctaaaccttccctc

.    .    .    .    .    .
ccttcttcccccatttcccacctacag
```

Exon 29 | Start: 14112 | End: 14165 | Length: 53
BE AWARE: This section overlaps with the previous exon

```
.    .    .    .    .    .    .    .    .    .    .    .
tgaggcctcatggctgtcaggatgctgggaggtaggggtaggaaacacctctttggtctc

.    .    .    .    .    .    .    .    .    .     |1931
ttccagattctaaaccttccctcccttcttcccccatttcccacctacagGGTCTCCCTG
                                                  G  L  P  G

 |1941     |1951     |1961     |1971     |1981  .    .    .
GTCCTGCTGGTCCTCCAGGTGAAGCAGGCAAACCTGGTGAACAGgtaagagggagcagcc
  P  A  G  P  P  G  E  A  G  K  P  G  E  Q
           |651                        |661

   .    .    .    .    .    .    .    .    .    .    .    .
ggccagaggggtgggagatgcagggaatccagagggacaggcccccgctcctagctaatc

   .    .    .    .    .    .    .    .    .    .    .    .
agacagccatcaactagagggattgaggttagacgccggaaagaacttcctcccatgaag

   .    .    .    .    .    .    .    .    .    .    .    .
ggagcagcacagagggaagtgggggctgcatgattgctagtctgggtgacttcttttaag

   .    .    .    .    .    .    .    .    .    .    .    .
agctgctggaatatgctgtgactttccctcaacccttctattgataaatcttggtccata
```

```
   .    .    .    .    .    .    .    .    .
gtttggggaggggggaagcctttgacacatccctaggaggaaga
```

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

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

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

.    .    .    .    .    .    .    .    .    .    .    .
gaagcctttgacacatccctaggaggaagagaggggctgtttgggataatctcaattcag

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

.    .    .    .    .    .    .    .    .    .    .    .
cagcagagtggccccaggtgggttttgctcactgtctgttcctctctccctccccctcag

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

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

    .    .    .
cctgtccttcccttctag
```

Exon 31 | Start: 14754 | End: 14852 | Length: 98
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
taagtaggcctctctcgctgcatccgtcaaggtgcgtcgtacttggccctatctccagag
```

```
.    .    .    .    .    .    .   |2031     |2041     |2051
cagccttcacatgccctgtccttcccttctagGGCGAGAGAGGTTTCCCTGGCGAGCGTG
                                 G  E  R  G  F  P  G  E  R  G
                                                |681

    |2061     |2071     |2081     |2091     |2101     |2111
GTGTGCAAGGTCCCCCTGGTCCTGCTGGTCCCCGAGGGGCCAACGGTGCTCCCGGCAACG
  V  Q  G  P  P  G  P  A  G  P  R  G  A  N  G  A  P  G  N  D
             |691                          |701

    |2121      .    .    .    .    .    .    .    .    .
ATGGTGCTAAGgtgagggcagcgtggaaggggctctggcaagtggcccagggaccaggtc
  G  A  K


.    .    .    .    .    .    .    .    .    .    .    .
tcacccctcctgcagcaggggatggcgggccatgaccaaagccatggagatagggtgtgg

.    .    .    .    .    .    .    .    .    .    .    .
ggtgggggaaaagaccagggcaggggcccacacacagcctggagtctgggctgtgagtc

.    .    .    .    .    .    .    .    .    .    .    .
ttttcatcttttctcaaggcttgtcgttggccttggaaacaagcctgggagataccaagc

.    .    .    .    .    .    .    .    .    .    .    .
ggggcttagggctgtgacccactcttggggccccaggcctcactccagtcttcttggttg

.    .
tcacatag


Exon 32 | Start: 15150 | End: 15257 | Length: 107
BE AWARE: This section overlaps with the previous exon


.    .    .    .    .    .    .    .    .    .    .    .
tgagggcagcgtggaaggggctctggcaagtggcccagggaccaggtctcacccctcctg

.    .    .    .    .    .    .    .    .    .    .    .
cagcaggggatggcgggccatgaccaaagccatggagatagggtgtggggtgggggaaa

.    .    .    .    .    .    .    .    .    .    .    .
agaccagggcaggggcccacacacagcctggagtctgggctgtgagtcttttcatctttt
```

```
.    .    .    .    .    .    .    .    .    .    .    .
ctcaaggcttgtcgttggccttggaaacaagcctgggagataccaagcggggcttagggc

.    .    .    .    .    .    .    .    .    .    .   |2131
tgtgacccactcttggggccccaggcctcactccagtcttcttggttgtcacatagGGTG
                                                     G  D
                                                        |711

         |2141     |2151     |2161     |2171     |2181     |2191
ATGCTGGTGCCCCTGGAGCTCCCGGTAGCCAGGGCGCCCCTGGCCTTCAGGGAATGCCTG
  A  G  A  P  G  A  P  G  S  Q  G  A  P  G  L  Q  G  M  P  G
                            |721                          |731

         |2201     |2211     |2221     |2231    .    .    .
GTGAACGTGGTGCAGCTGGTCTTCCAGGGCCTAAGGGTGACAGAgtaagttcaaccttcc
  E  R  G  A  A  G  L  P  G  P  K  G  D  R
                            |741

   .    .    .    .    .    .    .    .    .    .    .    .
ccctcccctgagccctacatggctcccatctctgcctgctttgaatctctcagcatctct

   .    .    .    .    .    .    .    .    .    .    .    .
ccttctctctgggatctgtccctcttctcgctaatcctcccttcttcccctttcccctct

   .    .    .    .    .    .    .    .    .    .    .    .
ggccttttgctgatgaatcctctccctgtggtccaggcccatctatccccatgggttac

   .    .    .    .    .    .    .    .    .    .    .    .
catggtgatgagaggtgggggcatctccttggtggaggctcccttattcatcccgctaca

   .    .    .    .    .    .    .    .    .
caagtcaggggcctcttaacctcagttccacctgagtctccagg
```

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

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

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

```
.    .    .    .    .    .    .    .    .    .    .    .
cagttccacctgagtctccaggcaggcacccttttttcctgaaagaatctttgagtccttg

.    .    .    .    .    .    .    .    .    .    .    .
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

  .    .    .    .    .    .
ccctgagcctcttgtcccttgctctcag
```

Exon 34 | Start: 16044 | End: 16097 | Length: 53
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
tgaggtggccgcctccccaccttctgccctaacacatagcctcctcagcaggcctgggca

.    .    .    .    .    .    .    .    .    .    .    .
cggttccgtggggttgcgttgggagagcaggtcctgccaaactgagctgtcaacctggga

.    .    .    .    .    .    .    .    .    .    .    .
acctggagggaccagaaggaggggaggctctcctggggtcatctactaggagtattcagg
```

```
.    .    .    .    .    .    .    .          |2351     |2361
ggaggccctgaccctgagcctcttgtcccttgctctcagGGTGAAAGTGGTCCCAGCGGC
                                       G  E  S  G  P  S  G


      |2371     |2381     |2391      .    .    .    .    .
CCTGCTGGTCCCACTGGAGCTCGTGGTGCCCCCgtaagtacagaagacctgttaagaccc
P  A  G  P  T  G  A  R  G  A  P
      |791

  .    .    .    .    .    .    .    .    .    .    .    .
catacttggcccttccctcccttcacacagcacccctggccctgtctgtgccttcacccc

  .    .    .    .    .    .    .    .    .    .    .    .
ttgcctctcccctcaccgcatccccgccttccctcctgtcagcgcatctctccaatctga

  .    .    .
ctccttttcttctag


Exon 35 | Start: 16260 | End: 16313 | Length: 53
BE AWARE: This section overlaps with both adjacent exons


.    .    .    .    .    .    .    .    .    .    .    .
taagtacagaagacctgttaagaccccatacttggcccttccctcccttcacacagcacc

.    .    .    .    .    .    .    .    .    .    .    .
cctggccctgtctgtgccttcacccctgcctctcccctcaccgcatccccgccttccct

.    .    .    .    .    .    .    .    .   |2401     |2411
cctgtcagcgcatctctccaatctgactccttttcttctagGGAGACCGTGGTGAGCCTG
                                         G  D  R  G  E  P  G
                                            |801

    |2421     |2431     |2441     |2451.    .    .    .    .
GTCCCCCCGGCCCTGCTGGCTTTGCTGGCCCCCCTgtgagtaccaagacccccatcattt
  P  P  G  P  A  G  F  A  G  P  P
              |811

    .    .    .    .    .    .    .    .    .    .    .    .
ttcatcaccgactgggacctgggacctcgagggacggaatgaggacaaaggcgtcagcca
```

```
    .    .    .    .    .    .    .    .    .    .    .    .
tcctcaggggagaagggtggagacgggattgtttcccacccaagcatcttcctgcctcca

    .    .    .    .    .    .    .    .    .    .    .    .
ttactgctcctccccccaggtagtggaaactcctgcctccttccctccattcaccgccctg

    .    .
cttcctcccccag
```

Exon 36 | Start: 16532 | End: 16639 | Length: 107
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
tgagtaccaagacccccatcatttttcatcaccgactgggacctgggacctcgagggacg

.    .    .    .    .    .    .    .    .    .    .    .
gaatgaggacaaaggcgtcagccatcctcaggggagaagggtggagacgggattgtttcc

.    .    .    .    .    .    .    .    .    .    .    .
cacccaagcatcttcctgcctccattactgctcctcccccaggtagtggaaactcctgcc

.    .    .    .    .    .    .    .          |2461     |2471
tccttccctccattcaccgccctgcttcctcccccagGGTGCTGACGGCCAACCTGGTGC
                                      G  A  D  G  Q  P  G  A
                                               |821

      |2481     |2491     |2501     |2511     |2521     |2531
TAAAGGCGAACCTGGTGATGCTGGTGCTAAAGGCGATGCTGGTCCCCCTGGCCCTGCCGG
 K  G  E  P  G  D  A  G  A  K  G  D  A  G  P  P  G  P  A  G
               |831                          |841

      |2541     |2551        .    .    .    .    .    .    .
ACCCGCTGGACCCCCTGGCCCCATTgtgagtggcttggccctctgtgcccacgaggctgg
 P  A  G  P  P  G  P  I
               |851

    .    .    .    .    .    .    .    .    .    .
tgggctgggacccaggacgggtccaggcttgatgcctctgtgctctcctacag
```

Exon 37 | Start: 16728 | End: 16781 | Length: 53

BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
tgagtggcttggccctctgtgcccacgaggctggtgggctgggacccaggacgggtccag

.    .    .    .    .    .  |2561     |2571     |2581     |2591
gcttgatgcctctgtgctctcctacagGGTAATGTTGGTGCTCCTGGAGCCAAAGGTGCT
                          G  N  V  G  A  P  G  A  K  G  A
                                                |861

        |2601     |2611  .    .    .    .    .    .    .
CGCGGCAGCGCTGGTCCCCCTgtgagtatcacccgcctctctgttgagcctctcccctct
R  G  S  A  G  P  P
                 |871

.    .    .    .    .    .    .    .    .    .    .    .
ccccaggcagcggtggcaggtgagggcagctgggtcggatgagttggctgttctccctct

.    .    .    .    .    .
gactgttcctatgttctctccttccag
```

Exon 38 | Start: 16908 | End: 16961 | Length: 53
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
tgagtatcacccgcctctctgttgagcctctcccctctccccaggcagcggtggcaggtg

.    .    .    .    .    .    .    .    .    .    .    .
agggcagctgggtcggatgagttggctgttctccctctgactgttcctatgttctctcct

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

   .    .    .    .    .    .    .    .    .    .    .    .
taagtctctgcagcagagtccactgctctaggttgggggtgctgggtgggggctgccaga

   .    .    .    .    .    .    .    .    .    .    .    .
aggatggtggggctgactgaggacccaatgatgcaccagagccccctggagtctgacagc
```

```
   .    .    .    .
ccctcctatcctcatccag
```

Exon 39 | Start: 17102 | End: 17263 | Length: 161
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
taagtctctgcagcagagtccactgctctaggttgggggtgctgggtgggggctgccaga

.    .    .    .    .    .    .    .    .    .    .    .
aggatggtggggctgactgaggacccaatgatgcaccagagccccctggagtctgacagc

.    .    .    .      |2671     |2681     |2691     |2701
ccctcctatcctcatccagGGAAATGCTGGACCCCCTGGCCCTCCTGGTCCTGCTGGCAA
                  G  N  A  G  P  P  G  P  P  G  P  A  G  K
                     |891                          |901

  |2711     |2721     |2731     |2741     |2751     |2761
AGAAGGCGGCAAAGGTCCCCGTGGTGAGACTGGCCCTGCTGGACGTCCTGGTGAAGTTGG
 E  G  G  K  G  P  R  G  E  T  G  P  A  G  R  P  G  E  V  G
                     |911                          |921

  |2771     |2781     |2791     |2801     |2811     |2821
TCCCCCTGGTCCCCCTGGCCCTGCTGGCGAGAAAGGATCCCCTGGTGCTGATGGTCCTGC
 P  P  G  P  P  G  P  A  G  E  K  G  S  P  G  A  D  G  P  A
                     |931                          |941

    .    .    .    .    .    .    .    .    .    .    .
Tgtaagtgccagctcagatctctgcagctccggaggtgtgcagagctggggaggggtccc

.    .    .    .    .    .    .    .    .
tgtgctgctctctggcacctcacccctgtttgcctcccaaag
```

Exon 40 | Start: 17365 | End: 17472 | Length: 107
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
taagtgccagctcagatctctgcagctccggaggtgtgcagagctggggaggggtccctg

.    .    .    .    .    .    .    .     |2831     |2841
tgctgctctctggcacctcacccctgtttgcctcccaaagGGTGCTCCTGGTACTCCCGG
                                         G   A   P   G   T   P   G


 |2851     |2861     |2871     |2881     |2891     |2901
GCCTCAAGGTATTGCTGGACAGCGTGGTGTGGTCGGCCTGCCTGGTCAGAGAGGAGAGAG
 P   Q   G   I   A   G   Q   R   G   V   V   G   L   P   G   Q   R   G   E   R
 |951                          |961

 |2911     |2921     |2931      .    .    .    .    .    .
AGGCTTCCCTGGTCTTCCTGGCCCCTCTgtaagtgccccccctcaccttgggggggccctga
 G   F   P   G   L   P   G   P   S
 |971

  .    .    .    .    .    .    .    .    .    .    .    .
gaaaaaccatcacaggacttggagtggggcggagccaaggagaacagatttggtagagat

  .    .    .    .    .    .    .    .    .    .    .    .
gactccagcggactcaagggtcctcccagaccctatctctggcctgactctttcttctcc

  .
cttag
```

Exon 41 | Start: 17630 | End: 17737 | Length: 107
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
taagtgccccccctcaccttgggggggccctgagaaaaaccatcacaggacttggagtgggg

.    .    .    .    .    .    .    .    .    .    .    .
cggagccaaggagaacagatttggtagagatgactccagcggactcaagggtcctcccag

.    .    .    .    .    .    .    .   |2941     |2951     |2961
accctatctctggcctgactctttcttctcccttagGGTGAACCTGGCAAACAAGGTCCC
                                      G   E   P   G   K   Q   G   P
                                         |981
```

```
         |2971     |2981     |2991     |3001     |3011     |3021
TCTGGAGCAAGTGGTGAACGTGGTCCCCCTGGTCCCATGGGCCCCCCTGGATTGGCTGGA
S  G  A  S  G  E  R  G  P  P  G  P  M  G  P  P  G  L  A  G
         |991                        |1001

         |3031     |3041    .    .    .    .    .    .    .
CCCCCTGGTGAATCTGGACGTGAGgtgagcagtccccagcccccatgccagtaccctcag
P  P  G  E  S  G  R  E
         |1011

   .    .    .    .    .    .    .    .    .    .    .    .
catggccattgtggccttgcctaagccctcttccccggctgactctcacttctctctctc

   .    .
tctctctgcag
```

Exon 42 | Start: 17845 | End: 17898 | Length: 53
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
tgagcagtccccagcccccatgccagtaccctcagcatggccattgtggccttgcctaag

.    .    .    .    .    .    .    .    .    .     |3051
ccctcttccccggctgactctcacttctctctctctctctctgcagGGGGCTCCTGGTGC
                                                 G  A  P  G  A

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

    .    .    .    .    .    .    .    .    .    .    .    .
gaccacagccttgtctgctgcttccctgccccatcctggcccttcacccggggctgaccc

    .    .    .    .
atattcccctgctctccccgccag
```

Exon 43 | Start: 18003 | End: 18110 | Length: 107
BE AWARE: This section overlaps with the previous exon

```
.    .    .    .    .    .    .    .    .    .    .    .
taagatggcaacactccatgaccacagccttgtctgctgcttccctgccccatcctggcc

.    .    .    .    .    .    .    .    .   |3101     |3111
cttcacccggggctgacccatattcccctgctctccccgccagGGTGACCGTGGTGAGAC
                                            G  D  R  G  E  T


    |3121     |3131     |3141     |3151     |3161     |3171
CGGCCCCGCTGGACCCCCTGGTGCTCCTGGTGCTCCTGGTGCCCCTGGCCCCGTTGGCCC
 G  P  A  G  P  P  G  A  P  G  A  P  G  A  P  G  P  V  G  P
    |1041                        |1051

    |3181     |3191     |3201      .    .    .    .    .
TGCTGGCAAGAGTGGTGATCGTGGTGAGACTgtaagtagctgggctccagttccctgtac
 A  G  K  S  G  D  R  G  E  T
    |1061

.    .    .    .    .    .    .    .    .    .    .    .
ctggtcaggccagggactcttcaggcctccttagaggcctggggatgggtgtcggacttc

.    .    .    .    .    .    .    .    .    .    .    .
acccaggcaggggggaggaaaggagatcctgcaagatgtcagggccttaatccaaaaaact

.    .    .    .    .    .    .    .    .    .    .    .
gagttaaagctcagccccaagtcccctctcccagacaggaccgcctctcccatgagttgg

.    .    .    .    .    .    .    .    .    .    .    .
ccccagctcccgtgaagattgcagtggggaggtttccctgggagttgggagagatggcca

.    .    .    .    .    .    .
cagtgggaagcagctgaggagagagagatcc
```

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

   .    .    .    .    .    .    .    .    .
gccaatggaacttccgcctgacagtttgtccctttctctcttctag


Exon 45 | Start: 18657 | End: 18764 | Length: 107
BE AWARE: This section overlaps with the previous exon


.    .    .    .    .    .    .    .    .    .    .    .
taagtaccctgctgtgtcccccatgcctttagaactctacagatgcagacagtgccccac

.    .    .    .    .    .    .    .    .    .    .
tcgatgccaatggaacttccgcctgacagtttgtccctttctctcttctagGGACCCCAA
                                                    G  P  Q


|3271     |3281     |3291     |3301     |3311     |3321
GGCCCCCGTGGTGACAAGGGTGAGACAGGCGAACAGGGCGACAGAGGCATAAAGGGTCAC
G  P  R  G  D  K  G  E  T  G  E  Q  G  D  R  G  I  K  G  H
|1091                        |1101

|3331     |3341     |3351     |3361        .    .    .    .
CGTGGCTTCTCTGGCCTCCAGGGTCCCCCTGGCCCTCCTgtaagtatgctcagcccctcc
R  G  F  S  G  L  Q  G  P  P  G  P  P
```

```
|1111                          |1121

   .    .    .    .    .    .    .    .    .    .    .    .
ccagtccccatgctgtgctgtgggataggaggggagcttcgcctcagtttccccctctg

   .    .    .    .    .    .    .    .    .    .    .    .
gatagtcattctttcccctccctagtggggactggggtctgaagatttgtgggcatgtcc

   .    .    .    .    .    .    .    .    .    .    .    .
aagtagcttctgagagggtgaggggtacacagagagggattatgggagaggtctctgcct

   .    .    .    .    .    .    .    .    .    .    .    .
atggacaccctcgggctagatttccagaataatgaaggggcatgggttgcccacactgcc

   .    .    .    .    .    .    .    .
cttgtctctccagccaggccctcaggctacatttgacgc


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


.    .    .    .    .    .    .    .    .    .    .    .
ctgtgggataggaggggagcttcgcctcagtttccccctctggatagtcattctttccc

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

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

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

.    .    .    .    .    .    .    .    .    .    .    .
gccctcaggctacatttgacgctcactgggcctgaactgccttttttatctgtccttcag

 |3371     |3381     |3391     |3401     |3411     |3421  .
GGCTCTCCTGGTGAACAAGGTCCCTCTGGAGCCTCTGGTCCTGCTGGTCCCCGAgtaagt
G  S  P  G  E  Q  G  P  S  G  A  S  G  P  A  G  P  R
                   |1131                         |1141

   .    .    .    .    .    .    .    .    .    .    .    .
catgccttctctctcctcttcctgagccccaagcccaggctcacctcggggacccttgcc
```

```
   .    .    .    .    .    .    .    .    .    .    .    .
agggacccaggcacccttgcctctctggagaagggttcagggacagggagtgggcaaag

   .    .    .    .    .    .    .    .    .    .    .    .
agaggaagaatcctgaacaaacaatctgatctagctttggcctctctgctccccaatccg

   .    .    .    .    .    .    .    .    .    .    .    .
tcctcccctggctcagcggctgggaggagctatggcatgtcctatggaaagaggctgagg

   .    .    .    .    .    .    .    .    .    .    .
ctggctctatgagccgtggggccagagccagcagggagggtggtgggcctctcc
```

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

```
.    .    .    .    .    .    .    .    .    .    .    .
ttgccagggacccaggcacccttgcctctctggagaagggttcagggacagggagtggg

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

  .    .    .    .    .    .    .    .    .    .    .    .
tcatcccctctgctcatggccctccagcccccaaagcacttggatgccggtaatccccac
```

```
   .    .    .    .
tctcttccctctctgtgcag
```

```
Exon 48 | Start: 19718 | End: 20000 | Length: 282
BE AWARE: This section overlaps with both adjacent exons
```

```
.    .    .    .    .    .    .    .    .    .    .    .
tatgtagcccctcatcccctctgctcatggccctccagcccccaaagcacttggatgccg

.    .    .    .    .    .    .         |3541     |3551
gtaatccccactctcttccctctctgtgcagGGTCCCCCCGGCCCTCCTGGACCTCCTGG
                                G  P  P  G  P  P  G  P  P  G
                                         |1181

|3561     |3571     |3581     |3591     |3601     |3611
TCCCCCTGGTCCTCCCAGCGCTGGTTTCGACTTCAGCTTCCTGCCCCAGCCACCTCAAGA
 P  P  G  P  P  S  A  G  F  D  F  S  F  L  P  Q  P  P  Q  E
          |1191                          |1201

|3621     |3631     |3641     |3651     |3661     |3671
GAAGGCTCACGATGGTGGCCGCTACTACCGGGCTGATGATGCCAATGTGGTTCGTGACCG
 K  A  H  D  G  G  R  Y  Y  R  A  D  D  A  N  V  V  R  D  R
          |1211                          |1221

|3681     |3691     |3701     |3711     |3721     |3731
TGACCTCGAGGTGGACACCACCCTCAAGAGCCTGAGCCAGCAGATCGAGAACATCCGGAG
 D  L  E  V  D  T  T  L  K  S  L  S  Q  Q  I  E  N  I  R  S
          |1231                          |1241

|3741     |3751     |3761     |3771     |3781     |3791
CCCAGAGGGCAGCCGCAAGAACCCCGCCCGCACCTGCCGTGACCTCAAGATGTGCCACTC
 P  E  G  S  R  K  N  P  A  R  T  C  R  D  L  K  M  C  H  S
          |1251                          |1261

|3801     |3811   .    .    .    .    .    .    .    .    .
TGACTGGAAGAGTGgtgagggcctgccctagcctctccctccctcctactcctgccatgc
 D  W  K  S  G
          |1271

   .    .    .    .    .    .    .    .    .    .    .    .
cagggtccccatgcccatatgtgcccctaccatatggtgctggctgctccctttccctga
```

```
   .    .    .    .    .
ctccatcttgccctgccctaccacag
```

Exon 49 | Start: 20133 | End: 20323 | Length: 190
BE AWARE: This section overlaps with both adjacent exons

```
.    .    .    .    .    .    .    .    .    .    .    .
tgagggcctgccctagcctctccctccctcctactcctgccatgccagggtccccatgcc

.    .    .    .    .    .    .    .    .    .    .    .
catatgtgcccctaccatatggtgctggctgctccctttccctgactccatcttgccctg

.    .    .       |3821     |3831     |3841     |3851     |3861
ccctaccacagGAGAGTACTGGATTGACCCCAACCAAGGCTGCAACCTGGATGCCATCAA
             E  Y  W  I  D  P  N  Q  G  C  N  L  D  A  I  K
                                     |1281

       |3871     |3881     |3891     |3901     |3911     |3921
AGTCTTCTGCAACATGGAGACTGGTGAGACCTGCGTGTACCCCACTCAGCCCAGTGTGGC
 V  F  C  N  M  E  T  G  E  T  C  V  Y  P  T  Q  P  S  V  A
       |1291                     |1301

       |3931     |3941     |3951     |3961     |3971     |3981
CCAGAAGAACTGGTACATCAGCAAGAACCCCAAGGACAAGAGGCATGTCTGGTTCGGCGA
 Q  K  N  W  Y  I  S  K  N  P  K  D  K  R  H  V  W  F  G  E
       |1311                     |1321

       |3991     |4001    .    .    .    .    .    .    .
GAGCATGACCGATGGATTCCAGgtgcgtgagctggacctcagagccagtgttaggagatg
 S  M  T  D  G  F  Q
       |1331

 .    .    .    .    .    .    .    .    .    .    .    .
ggctagcccagtgctcagaagggacatgaagtcctggagtaggtctctgctaagggtgat

 .    .    .    .    .    .    .    .    .    .    .    .
ggacagagctgggctgggaggcaggggtctcaggtccctgatagtggttcagacacaggc

 .    .    .    .    .    .    .    .    .    .    .    .
tgccgatgggcaggtggtgcctcctctcgatataacggtgcattgggcagctctctgagg
```

```
 .    .    .    .    .    .    .    .    .    .    .    .
accctggacagggaggccaggcaggactagaggttcccgcatagcggctcactcttccct

 .    .    .    .
ctctcccctcccctgcag


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


.    .    .    .    .    .    .    .    .    .    .    .
tgcgtgagctggacctcagagccagtgttaggagatgggctagcccagtgctcagaaggg

.    .    .    .    .    .    .    .    .    .    .    .
acatgaagtcctggagtaggtctctgctaagggtgatggacagagctgggctgggaggca

.    .    .    .    .    .    .    .    .    .    .    .
ggggtctcaggtccctgatagtggttcagacacaggctgccgatgggcaggtggtgcctc

.    .    .    .    .    .    .    .    .    .    .    .
ctctcgatataacggtgcattgggcagctctctgaggaccctggacagggaggccaggca

.    .    .    .    .    .    .    .    .    .    .
ggactagaggttcccgcatagcggctcactcttccctctctcccctcccctgcagTTCGA
                                                       F  E


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

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

|4131     |4141     |4151     |4161     |4171     |4181
GGACCAGCAGACTGGCAACCTCAAGAAGGCCCTGCTCCTCCAGGGCTCCAACGAGATCGA
 D  Q  Q  T  G  N  L  K  K  A  L  L  L  Q  G  S  N  E  I  E
          |1381                        |1391

|4191     |4201     |4211     |4221     |4231     |4241
```

```
GATCCGCGCCGAGGGCAACAGCCGCTTCACCTACAGCGTCACTGTCGATGGCTGCACGgt
 I  R  A  E  G  N  S  R  F  T  Y  S  V  T  V  D  G  C  T
          |1401                        |1411

  .     .     .     .     .     .     .     .     .     .     .     .
gagtgcccagaatccccaggcagggccccacctctccggccttgggctttttggccaggc

  .     .     .     .     .     .     .     .     .     .     .     .
catagtgccctctctccatcactcccacgtggtaatgccccctcccgttgtctccgcccc

  .     .     .     .     .     .     .     .     .     .     .     .
accccagagtcacaccggagcctggggcaagacagtgattgaatacaaaaccaccaagac

  .     .     .     .     .     .     .     .     .     .     .     .
ctcccgcctgcccatcatcgatgtggcccccttggacgttggtgccccagaccaggaatt

  .     .     .     .     .     .     .     .     .     .     .     .
cggcttcgacgttggccctgtctgcttcctgtaaactccctccatcccaacctggctc
```

Exon 51 | Start: 20992 | End: 22544 | Length: 1552
BE AWARE: This section overlaps with the previous exon

```
.     .     .     .     .     .     .     .     .     .     .     .
tgagtgcccagaatccccaggcagggccccacctctccggccttgggctttttggccagg

.     .     .     .     .     .     .     .     .     .     .     .
ccatagtgccctctctccatcactcccacgtggtaatgccccctcccgttgtctccgccc

.     .     |4251      |4261      |4271      |4281      |4291
caccccagAGTCACACCGGAGCCTGGGGCAAGACAGTGATTGAATACAAAACCACCAAGA
         S  H  T  G  A  W  G  K  T  V  I  E  Y  K  T  T  K  T
                     |1421                        |1431

|4301      |4311      |4321      |4331      |4341      |4351
CCTCCCGCCTGCCCATCATCGATGTGGCCCCCTTGGACGTTGGTGCCCCAGACCAGGAAT
  S  R  L  P  I  I  D  V  A  P  L  D  V  G  A  P  D  Q  E  F
                     |1441                        |1451

|4361      |4371      |4381      |4391|+1        |+11       |+21
TCGGCTTCGACGTTGGCCCTGTCTGCTTCCTGTAAACTCCCTCCATCCCAACCTGGCTCC
  G  F  D  V  G  P  V  C  F  L  *
                     |1461
```

```
     |+31       |+41       |+51       |+61       |+71       |+81
CTCCCACCCAACCAACTTTCCCCCCAACCCGGAAACAGACAAGCAACCCAAACTGAACCC

     |+91       |+101      |+111      |+121      |+131      |+141
CCTCAAAAGCCAAAAAATGGGAGACAATTTCACATGGACTTTGGAAAATATTTTTTTCCT

     |+151      |+161      |+171      |+181      |+191      |+201
TTGCATTCATCTCTCAAACTTAGTTTTTATCTTTGACCAACCGAACATGACCAAAAACCA

     |+211      |+221      |+231      |+241      |+251      |+261
AAAGTGCATTCAACCTTACCAAAAAAAAAAAAAAAAAAAAGAATAAATAAATAACTTTTTA

     |+271      |+281      |+291      |+301      |+311      |+321
AAAAAGGAAGCTTGGTCCACTTGCTTGAAGACCCATGCGGGGGTAAGTCCCTTTCTGCCC

     |+331      |+341      |+351      |+361      |+371      |+381
GTTGGGCTTATGAAACCCCAATGCTGCCCTTTCTGCTCCTTTCTCCACACCCCCCTTGGG

     |+391      |+401      |+411      |+421      |+431      |+441
GCCTCCCCTCCACTCCTTCCCAAATCTGTCTCCCCAGAAGACACAGGAAACAATGTATTG

     |+451      |+461      |+471      |+481      |+491      |+501
TCTGCCCAGCAATCAAAGGCAATGCTCAAACACCCAAGTGGCCCCCACCCTCAGCCCGCT

     |+511      |+521      |+531      |+541      |+551      |+561
CCTGCCCGCCCAGCACCCCCAGGCCCTGGGGGACCTGGGGTTCTCAGACTGCCAAAGAAG

     |+571      |+581      |+591      |+601      |+611      |+621
CCTTGCCATCTGGCGCTCCCATGGCTCTTGCAACATCTCCCCTTCGTTTTTGAGGGGGTC

     |+631      |+641      |+651      |+661      |+671      |+681
ATGCCGGGGGAGCCACCAGCCCCTCACTGGGTTCGGAGGAGAGTCAGGAAGGGCCACGAC

     |+691      |+701      |+711      |+721      |+731      |+741
AAAGCAGAAACATCGGATTTGGGGAACGCGTGTCAATCCCTTGTGCCGCAGGGCTGGGCG

     |+751      |+761      |+771      |+781      |+791      |+801
GGAGAGACTGTTCTGTTCCTTGTGTAACTGTGTTGCTGAAAGACTACCTCGTTCTTGTCT

     |+811      |+821      |+831      |+841      |+851      |+861
TGATGTGTCACCGGGGCAACTGCCTGGGGGCGGGGATGGGGGCAGGGTGGAAGCGGCTCC

     |+871      |+881      |+891      |+901      |+911      |+921
CCATTTTATACCAAAGGTGCTACATCTATGTGATGGGTGGGGTGGGGAGGGAATCACTGG
```

```
     |+931      |+941      |+951      |+961      |+971      |+981
TGCTATAGAAATTGAGATGCCCCCCCCAGGCCAGCAAATGTTCCTTTTTGTTCAAAGTCTA

     |+991      |+1001     |+1011     |+1021     |+1031     |+1041
TTTTTATTCCTTGATATTTTTCTTTTTTTTTTTTTTTTTTTTGTGGATGGGGACTTGTGAA

     |+1051     |+1061     |+1071     |+1081     |+1091     |+1101
TTTTTCTAAAGGTGCTATTTAACATGGGAGGAGAGCGTGTGCGGCTCCAGCCCAGCCCGC

     |+1111     |+1121     |+1131     |+1141     |+1151     |+1161
TGCTCACTTTCCACCCTCTCTCCACCTGCCTCTGGCTTCTCAGGCCTCTGCTCTCCGACC

     |+1171     |+1181     |+1191     |+1201     |+1211     |+1221
TCTCTCCTCTGAAACCCTCCTCCACAGCTGCAGCCCATCCTCCCGGCTCCCTCCTAGTCT

     |+1231     |+1241     |+1251     |+1261     |+1271     |+1281
GTCCTGCGTCCTCTGTCCCCGGGTTTCAGAGACAACTTCCCAAAGCACAAAGCAGTTTTT

     |+1291     |+1301     |+1311     |+1321     |+1331     |+1341
CCCCCTAGGGGTGGGAGGAAGCAAAAGACTCTGTACCTATTTTGTATGTGTATAATAATT

     |+1351     |+1361     |+1371     |+1381     |+1391     |+1401
TGAGATGTTTTTAATTATTTTGATTGCTGGAATAAAGCATGTGGAAATGACCCAAACATA

     .    .    .    .    .    .    .    .    .    .    .
Atccgcagtggcctcctaatttccttctttggagttgggggaggggtagacatggggaag

.    .    .    .    .    .    .    .    .    .    .    .
gggctttggggtgatgggcttgccttccattcctgccctttccctccccactattctctt

.    .    .    .    .    .    .    .    .    .    .    .
ctagatccctccataaccccactccccttctctcacccttcttataccgcaaacctttc

.    .    .    .    .    .    .    .    .    .    .    .
tacttcctctttcattttctattcttgcaatttccttgcacctttttccaaatcctcttct

.    .    .    .    .    .    .    .    .    .    .    .
cccctgcaataccatacaggcaatccacgtgcacaacacacacacacactcttcacatct

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g


LRG Parser: Version: 1, Version Date: 11/02/2015
Reader: Version: 1, Version Date: 11/02/2015
Writer: Version: 0.3, Version Date: 11/02/2015
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Control: Version: 1, Version Date: 11/02/2015