Gene: NF1 - Sequence: NG_009018.1
Date : February 11, 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: 4951 | End: 5393 | Length: 442



.    .    .    .    .    .    .    .    .    .    .    .
agggacgctcgccagacggcccagaggagttagatgacgtcacctccaggaggactcgct

.    .    .    .    .    .    .    .    .    .    .    .
ttttcattaatgaaaccggccggcgcgggcgcatgcgcggcaggccgccttccctctcgc

.    .    .    .    .    .        |-379     |-369     |-359
ttccccctcccctttcccagccgcgctctcAATCTCTAGCTCGCTCGCGCTCCCTCTCCC

    |-349     |-339     |-329     |-319     |-309     |-299
CGGGCCGTGGAAAGGATCCCACTTCCGGTGGGGTGTCATGGCGGCGTCTCGGACTGTGAT

    |-289     |-279     |-269     |-259     |-249     |-239
GGCTGTGGGGAGACGGCGCTAGTGGGGAGAGCGACCAAGAGGCCCCCTCCCCTCCCCGGG

    |-229     |-219     |-209     |-199     |-189     |-179
TCCCCTTCCCCTATCCCCCTCCCCCCAGCCTCCTTGCCAACGCCCCCTTTCCCTCTCCCC

    |-169     |-159     |-149     |-139     |-129     |-119
CTCCCGCTCGGCGCTGACCCCCCATCCCCACCCCCGTGGGAACACTGGGAGCCTGCACTC

    |-109     |-99      |-89      |-79      |-69      |-59
CACAGACCCTCTCCTTGCCTCTTCCCTCACCTCAGCCTCCGCTCCCCGCCCTCTTCCCGG

    |-49      |-39      |-29      |-19      |-9      |1
CCCAGGGCGCCGGCCCACCCTTCCCTCCGCCGCCCCCCGGCCGCGGGGAGGACATGGCCG
                                                  M  A  A
                                                  |1

   |11       |21       |31       |41       |51          .
CGCACAGGCCGGTGGAATGGGTCCAGGCCGTGGTCAGCCGCTTCGACGAGCAGgtaaccg
  H  R  P  V  E  W  V  Q  A  V  V  S  R  F  D  E  Q
```

```
                        |11

  .    .    .    .    .    .    .    .    .    .    .    .
gcccgtggcgggcgggaggtgggagcggagtgggggtggggacagagtaggtgaggggag

  .    .    .    .    .    .    .    .    .    .    .    .
gtaggagcggccgcctccccgcggctgcctcaggctctggaggaaaggaagggaagggga

  .    .    .    .    .
agagaagggaagggggataagt
```

Exon 2 | Start: 66007 | End: 66150 | Length: 143

```
.    .    .    .    .    .    .    .    .    .    .    .
gattgaaaatcggagtttgagatgcaagtataggtatctgtggttgatgcagttttccta

.    .    .    .    .    .    .    .    .    .    .    .
aaacgtcatgattttcaatggcaagtaagttatttatggtcgtttttaaggataagctgt

.    .    .    .    .    .    |61       |71       |81
taacgtgttttttttttctttttttttcagCTTCCAATAAAAACAGGACAGCAGAACACA
                              L  P  I  K  T  G  Q  Q  N  T
                              |21

|91       |101      |111      |121      |131      |141
CATACCAAAGTCAGTACTGAGCACAACAAGGAATGTCTAATCAATATTTCCAAATACAAG
H  T  K  V  S  T  E  H  N  K  E  C  L  I  N  I  S  K  Y  K
|31                           |41

|151      |161      |171      |181      |191      |201    .
TTTTCTTTGGTTATAAGCGGCCTCACTACTATTTTAAAGAATGTTAACAATATGgtgagt
F  S  L  V  I  S  G  L  T  T  I  L  K  N  V  N  N  M
|51                           |61

   .    .    .    .    .    .    .    .    .    .    .    .
atttgggttactgtgttttggggaatttgctttcttttcttttgattaaaaagtttaga

   .    .    .    .    .    .    .    .    .    .    .    .
acagcatattttgaagtatggaaagtgattttctgtggactttggatataaccattaatc

   .    .    .    .    .
ttattttgtttacgagcacagata
```

Exon 3 | Start: 69034 | End: 69117 | Length: 83

```
.    .    .    .    .    .    .    .    .    .    .    .
aatcagaaataatatatttaagtatagtataatctgggaggtaaaatggaagactattgt

.    .    .    .    .    .    .    .    .    .    .    .
tgatcttttagtctttcacttttcagatgtgtgttgattggtagcagaaagtgaaactaa

.    .    .    .    .    .          |211      |221      |231
cttttatgttctgaatatcttttctgttagAGAATATTTGGAGAAGCTGCTGAAAAAAAT
                              R  I  F  G  E  A  A  E  K  N
                                    |71

      |241      |251      |261      |271      |281        .
TTATATCTCTCTCAGTTGATTATATTGGATACACTGGAAAAATGTCTTGCTGGGgtaagt
L  Y  L  S  Q  L  I  I  L  D  T  L  E  K  C  L  A  G
      |81                           |91

   .    .    .    .    .    .    .    .    .    .    .    .
aaattgatcttaagtaggcaggctttgtgaatttgatcttgagaatgatcttatgtccca

   .    .    .    .    .    .    .    .    .    .    .    .
aagtacagatgtggaccaagaggacagtcctatggacttttgtctgagacatataaatat

   .    .    .    .    .
gagttttgttaatatagctgacct
```

Exon 4 | Start: 73210 | End: 73400 | Length: 190

```
.    .    .    .    .    .    .    .    .    .    .    .
tgatgaaacgttaacagttgttaaatctaggtggtgtgtatgtaaggtgttcattatttt

.    .    .    .    .    .    .    .    .    .    .    .
tgttctgtgtgtgtgtttgaaaattttcataatagaaaatgtttacaggtaaaattaaag

.    .    .    .    .    .      |291      |301      |311
tttagaataatgtgattatttctattttagCAACCAAAGGACACAATGAGATTAGATGAA
```

```
                                Q  P  K  D  T  M  R  L  D  E
                                                |101

  |321       |331       |341       |351       |361       |371
ACGATGCTGGTCAAACAGTTGCTGCCAGAAATCTGCCATTTTCTTCACACCTGTCGTGAA
T  M  L  V  K  Q  L  L  P  E  I  C  H  F  L  H  T  C  R  E
            |111                          |121

  |381       |391       |401       |411       |421       |431
GGAAACCAGCATGCAGCTGAACTTCGGAATTCTGCCTCTGGGGTTTTATTTTCTCTCAGC
G  N  Q  H  A  A  E  L  R  N  S  A  S  G  V  L  F  S  L  S
            |131                          |141

  |441       |451       |461       |471          .    .    .
TGCAACAACTTCAATGCAGTCTTTAGTCGCATTTCTACCAGgttagtgtgtaaatccaca
C  N  N  F  N  A  V  F  S  R  I  S  T  R
            |151

.    .    .    .    .    .    .    .    .    .    .    .
tgggactactgaagtaatatgaatattagaagttttgtttttttgtctacataaaaataaa

.    .    .    .    .    .    .    .    .    .    .    .
aagttaatggaaatgaggtttttttgtttttgagacaagttcttttgcccctcacagcag

.    .    .
ctttgacctcc
```

Exon 5 | Start: 79915 | End: 80021 | Length: 106

```
.    .    .    .    .    .    .    .    .    .    .    .
ttgctatgttgcccaggctggtcttgaactcctggcctcaagtggtcctcctgccttggc

.    .    .    .    .    .    .    .    .    .    .    .
ctcctgaagtgctgggattacaggtgtgagataccacacctgtcccctaatacttaattt

.    .    .    .    .    .      |481       |491       |501
gataagttaattttggtttttacttttttagGTTACAGGAATTAACTGTTTGTTCAGAAGA
                               L  Q  E  L  T  V  C  S  E  D
                               |161

 |511       |521       |531       |541       |551       |561
CAATGTTGATGTTCATGATATAGAATTGTTACAGTATATCAATGTGGATTGTGCAAAATT
```

```
 N  V  D  V  H  D  I  E  L  L  Q  Y  I  N  V  D  C  A  K  L
 |171                        |181

 |571      |581      .    .    .    .    .    .    .    .
AAAACGACTCCTGAAGGgtaagtttaaatgtataatatatctgaaaaaaatcactgggtc
 K  R  L  L  K  E
 |191

 .    .    .    .    .    .    .    .    .    .    .    .
aaaaactagtatcatgaatgtactaattatattaattgtgctgaactagaacaccaaact

 .    .    .    .    .    .    .    .    .    .
ggattttataatgacatttccttgtgaaataaccagtaatacaaatg
```

Exon 6 | Start: 91446 | End: 91513 | Length: 67
BE AWARE: This section overlaps with the following exon

```
.    .    .    .    .    .    .    .    .    .    .    .
ttttgggtttatgttaggtgtctttacctttcattgcttacagataatattggagcaaaa

.    .    .    .    .    .    .    .    .    .    .    .
gtaatacgtaaatggaaagttattttgctctgagttgtatttgtgttaacttattctaga

.    .    .    .    .    .        |591      |601      |611
gttaatttttaaaaattgtgtttttttccagAAACAGCATTTAAATTTAAAGCCCTAAAGA
                               T  A  F  K  F  K  A  L  K  K
                                        |201

    |621      |631      |641      |651    .    .    .    .
AGGTTGCGCAGTTAGCAGTTATAAATAGCCTGGAAAAGgtaagttacaacctctctggta
  V  A  Q  L  A  V  I  N  S  L  E  K
             |211

  .    .    .    .    .    .    .    .    .    .    .    .
ttaaaattttgtttttgatgtaaaatttgctgttgttagcatcctgaatcaaaaagttat

  .    .    .    .    .    .    .    .    .    .    .    .
gacttgagtgatagtttcacattcattttcaggaagaatacattgtaatattattatgaa

  .    .
ggaagtta
```

Exon 7 | Start: 91734 | End: 91809 | Length: 75

```
.    .    .    .    .    .    .    .    .    .    .    .
tcaaaaagttatgacttgagtgatagtttcacattcattttcaggaagaatacattgtaa

.    .    .    .    .    .    .    .    .    .    .    .
tattattatgaaggaagttagaagtttgtgacattttatttactgtattacaaaaaatca

.    .    .    .    .    .          |661      |671      |681
ctgtaaagacatgtggttctttatttatagGCATTTTGGAACTGGGTAGAAAATTATCCA
                              A  F  W  N  W  V  E  N  Y  P
                                    |221

      |691      |701      |711      |721          .    .
GATGAATTTACAAAACTGTACCAGATCCCACAGACTGATATGGCTGgtaaggatacgatt
D  E  F  T  K  L  Y  Q  I  P  Q  T  D  M  A  E
      |231                          |241

.    .    .    .    .    .    .    .    .    .    .    .
gatttttttttttttttgtctttaaatgcctacttgtgacataaaaacctatcatcgt

.    .    .    .    .    .    .    .    .    .    .    .
tttccaagttatttttgttataaaggtgcttttacatcttctattgtcaactggtgtcaa

.    .    .    .
ataggaaatactgttt
```

Exon 8 | Start: 92532 | End: 92689 | Length: 157

```
.    .    .    .    .    .    .    .    .    .    .    .
cagaatgcatttgtgtagttgcttaaatgaagttccatgtttatcttttaaaaatgttgc

.    .    .    .    .    .    .    .    .    .    .    .
ccttgggtttttacatagtgtcagctttactttaatgccagggattttgttcctatcta

.    .    .    .    .    .    |731      |741      |751
ataatgtcatttaatatatttttcatgcagAATGTGCAGAAAAGCTATTTGACTTGGTGG
                              C  A  E  K  L  F  D  L  V  D
```

```
                                                        |251

|761      |771      |781      |791      |801      |811
ATGGTTTTGCTGAAAGCACCAAACGTAAAGCAGCAGTTTGGCCACTACAAATCATTCTCC
  G  F  A  E  S  T  K  R  K  A  A  V  W  P  L  Q  I  I  L  L
                   |261                          |271

|821      |831      |841      |851      |861      |871
TTATCTTGTGTCCAGAAATAATCCAGGATATATCCAAAGACGTGGTTGATGAAAACAACA
  I  L  C  P  E  I  I  Q  D  I  S  K  D  V  V  D  E  N  N  M
                   |281                          |291

|881       .    .    .    .    .    .    .    .    .    .
TGAATAAGgtaaggagggcaaaattatttccattatatctagatgtgaagcagtttattt
  N  K


  .    .    .    .    .    .    .    .    .    .    .    .
tactcaaggtgtgtattactttaggcttattatttaagcaaagtatttcagggaaccatt

  .    .    .    .    .    .    .    .
taaatgatcattttaggtttctttgtttgatggactta



Exon 9 | Start: 110446 | End: 110619 | Length: 173



.    .    .    .    .    .    .    .    .    .    .    .
acttaaattatgaaattgaaaaccacaaatataaattatgcattctttatagtatgagtt

.    .    .    .    .    .    .    .    .    .    .    .
ttagaggctgttaatttgctataatattagctacatctggaatagaagaaacttcatata

.    .    .    .    .    .      |891      |901      |911
ttatcttatcgctatatttgaattctgtagAAGTTATTTCTGGACAGTCTACGAAAAGCT
                             K  L  F  L  D  S  L  R  K  A
                                       |301

  |921      |931      |941      |951      |961      |971
CTTGCTGGCCATGGAGGAAGTAGGCAGCTGACAGAAAGTGCTGCAATTGCCTGTGTCAAA
L  A  G  H  G  G  S  R  Q  L  T  E  S  A  A  I  A  C  V  K
           |311                          |321

  |981      |991      |1001     |1011     |1021     |1031
```

```
CTGTGTAAAGCAAGTACTTACATCAATTGGGAAGATAACTCTGTCATTTTCCTACTTGTT
L  C  K  A  S  T  Y  I  N  W  E  D  N  S  V  I  F  L  L  V
           |331                        |341

  |1041     |1051     |1061 .    .    .    .    .    .    .
CAGTCCATGGTGGTTGATCTTAAGgtaacatgcttattctttctctactacaaactttaa
Q  S  M  V  V  D  L  K
           |351

   .    .    .    .    .    .    .    .    .    .    .    .
gaaaattaaatgaattttctagcataagtattatgtcaaagataattgctaacattaaag

   .    .    .    .    .    .    .    .    .    .    .
ttctgactcttcgttgataagttcataggacttgcttttgttgttactgtgttc
```

Exon 10 | Start: 111061 | End: 111183 | Length: 122
BE AWARE: This section overlaps with the following exon

```
.    .    .    .    .    .    .    .    .    .    .    .
gatgaaccacagtatgggtgctttgtgcttcttctggcagctggattttactgccatttg

.    .    .    .    .    .    .    .    .    .    .    .
tgtgggtaatgtgttgatgttattacatgttagtaaagaaatactgcatgggtatttaaa

.    .    .    .    .    .           |1071     |1081     |1091
ggcttttgttttctgttggggttttttatagAACCTGCTTTTTAATCCAAGTAAGCCATTC
                              N  L  L  F  N  P  S  K  P  F
                                                |361

        |1101     |1111     |1121     |1131     |1141     |1151
TCAAGAGGCAGTCAGCCTGCAGATGTGGATCTAATGATTGACTGCCTTGTTTCTTGCTTT
S  R  G  S  Q  P  A  D  V  D  L  M  I  D  C  L  V  S  C  F
                  |371                        |381

        |1161     |1171     |1181    .    .    .    .    .
CGTATAAGCCCTCACAACAACCAACACTTTAAGgtgagagcattggtttttatctaacta
R  I  S  P  H  N  N  Q  H  F  K
                  |391

  .    .    .    .    .    .    .    .    .    .    .    .
tatttactgatgctgttatccttttataaacaaaaagactatagagattaataggttcact
```

```
  .    .    .    .    .    .    .    .    .    .    .    .
tttatcggtatttctcactattatgtattgatgttcgtttcaagaccttaaaaacttagt

  .
gtt
```

Exon 11 | Start: 111435 | End: 111509 | Length: 74

```
.    .    .    .    .    .    .    .    .    .    .    .
tcactattatgtattgatgttcgtttcaagaccttaaaaacttagtgtttttttttttaaa

.    .    .    .    .    .    .    .    .    .    .    .
ctttctatttgctgttctttttggcttcatttgtattactgagtatttttctcatagaaa

.    .    .    .    .    .         |1191     |1201     |1211
taatctgctttttttttttctttttctatagATCTGCCTGGCTCAGAATTCACCTTCTACA
                              I  C  L  A  Q  N  S  P  S  T
                                             |401

     |1221     |1231     |1241     |1251         .    .    .
TTTCACTATGTGCTGGTAAATTCACTCCATCGAATCATCACCAATgtaagtccaaaaggt
F  H  Y  V  L  V  N  S  L  H  R  I  I  T  N
               |411

    .    .    .    .    .    .    .    .    .    .    .    .
attgctaaattactaaaaaaattttttttctttctttttctttgcgtatttctttttaagaa

    .    .    .    .    .    .    .    .    .    .    .    .
atgcactcttggttttcaaaaaggttctgaatttagatgtatgaaataggaaaatttctc

    .    .    .
catggtgattctatt
```

Exon 12 | Start: 116264 | End: 116395 | Length: 131

```
.    .    .    .    .    .    .    .    .    .    .    .
tttgaagactttggaaatcatggtgtgtgtttgcatggtcttagaaagttcccgacaaaa
```

```
.    .    .    .    .    .    .    .    .    .    .    .
ggataaaacttaaaactacagtgataaacagagcatacaactcacgtaattttgtacttt

.    .    .    .    .    .    |1261     |1271     |1281
ttcttcctattggtctttgtttttctctagTCCGCATTGGATTGGTGGCCTAAGATTGAT
                              S  A  L  D  W  W  P  K  I  D
                              |421

|1291     |1301     |1311     |1321     |1331     |1341
GCTGTGTATTGTCACTCGGTTGAACTTCGAAATATGTTTGGTGAAACACTTCATAAAGCA
A  V  Y  C  H  S  V  E  L  R  N  M  F  G  E  T  L  H  K  A
|431                          |441

|1351     |1361     |1371     |1381     |1391 .    .    .
GTGCAAGGTTGTGGAGCACACCCAGCAATACGAATGGCACCGgtaagataaatcacgaat
V  Q  G  C  G  A  H  P  A  I  R  M  A  P
|451                          |461

 .    .    .    .    .    .    .    .    .    .    .    .
tttgaatctcacctcctttctattgcatttttttttagtgtctttatcctattcctgctgc

 .    .    .    .    .    .    .    .    .    .    .    .
tttggttattttagagaattgaatgggtccttcatttcctctaaatgttgtggtatgttg

 .    .    .
tatctagaatat
```

Exon 13 | Start: 124475 | End: 124609 | Length: 134

```
.    .    .    .    .    .    .    .    .    .    .    .
tactattgagtgtttctactaataccacacatttggtagtataaaaaatagctttttca

.    .    .    .    .    .    .    .    .    .    .    .
aaggtttttaataataaatttctttttaaaaggttggatagctattatcctgagtcttatg

.    .    .    .    .    .              |1401     |1411     |1421
tctgataccatgtttttgttttgtttttagAGTCTTACATTTAAAGAAAAAGTAACAAGC
                              S  L  T  F  K  E  K  V  T  S
                                                 |471

        |1431     |1441     |1451     |1461     |1471     |1481
CTTAAATTTAAAGAAAAACCTACAGACCTGGAGACAAGAAGCTATAAGTATCTTCTCTTG
```

```
L  K  F  K  E  K  P  T  D  L  E  T  R  S  Y  K  Y  L  L  L
                  |481                        |491

        |1491     |1501     |1511     |1521     .    .    .
TCCATGGTGAAACTAATTCATGCAGATCCAAAGCTCTTGCTTTGTgtaagtatttttttta
S  M  V  K  L  I  H  A  D  P  K  L  L  L  C
                  |501

    .    .    .    .    .    .    .    .    .    .    .    .
tgaaatgtctcaaaattatcacactaagttaattgggtttagctgaaacgccaagacctt

    .    .    .    .    .    .    .    .    .    .    .    .
gaggataatttttagctcaagagcacttactgatcctttctgatcatacctgaaaactaa

    .    .    .
gacgtctctaagaaa
```

Exon 14 | Start: 129029 | End: 129142 | Length: 113

```
.    .    .    .    .    .    .    .    .    .    .    .
aaccaccgcgtccagcctagttctagaacattgttatcacccctaaaagaaacttggtac

.    .    .    .    .    .    .    .    .    .    .    .
cctttagcagtcactgtctatttcttcctccttctaatctctctcgatttatttatttttt

.    .    .    .    .    .        |1531     |1541     |1551
ttaattgaagtttccttttttttccttgcagAATCCAAGAAAACAGGGGCCCGAAACCCAA
                              N  P  R  K  Q  G  P  E  T  Q
                                 |511

   |1561     |1571     |1581     |1591     |1601     |1611
GGCAGTACAGCAGAATTAATTACAGGGCTCGTCCAACTGGTCCCTCAGTCACACATGCCA
G  S  T  A  E  L  I  T  G  L  V  Q  L  V  P  Q  S  H  M  P
   |521                        |531

   |1621     |1631     |1641.    .    .    .    .    .    .
GAGATTGCTCAGGAAGCAATGGAGgtaaggggaaaatgaattccatgttcttgaaggaaa
E  I  A  Q  E  A  M  E
   |541

   .    .    .    .    .    .    .    .    .    .    .    .
gattgtaactatgtacattcatgatgttcctttggtgtgtggtttctgtgagtaacaggt
```

```
   .    .    .    .    .    .    .    .    .    .    .
agatgtcatttctggaaatggtatgtttatgtctatacattgttttataaaact


Exon 15 | Start: 131874 | End: 131953 | Length: 79


.    .    .    .    .    .    .    .    .    .    .    .
ttctctcttttttacctttactatatattgaaactacaaatgaaagagctcaatttctta

.    .    .    .    .    .    .    .    .    .    .    .
gcatttataaaataagtactccagtgttatgtttaccaaaaatgtttgagtgagtcttct

.    .    .    .    .    .             |1651     |1661     |1671
ctttgtctttctctttttttaaaaaattcagGCTCTGCTGGTTCTTCATCAGTTAGATAGC
                               A  L  L  V  L  H  Q  L  D  S
                                        |551

         |1681     |1691     |1701     |1711     |1721.    .
ATTGATTTGTGGAATCCTGATGCTCCTGTAGAAACATTTTGGGAGATTAGgtatatgtac
I  D  L  W  N  P  D  A  P  V  E  T  F  W  E  I  S
         |561                        |571

    .    .    .    .    .    .    .    .    .    .    .    .
ttttatttttttaaattcaacttttaaattttattttgtatttttgtcttgaaatattaac

    .    .    .    .    .    .    .    .    .    .    .    .
tctgtagtacttagtacattgtaaaacttacacttccaaaggttttatggttttgtattt

    .    .    .    .
tatttgacttcaaattatta


Exon 16 | Start: 133468 | End: 133591 | Length: 123


.    .    .    .    .    .    .    .    .    .    .    .
actttgataactgtttctctaaaaccttacaagaaaaactaagcttctctaaacttgtat

.    .    .    .    .    .    .    .    .    .    .    .
tcattatgggagaatgccattcttatgtctggttatatctgcattaggttattgatgatg
```

```
.    .    .    .    .    .            |1731     |1741     |1751
ctagtaacaatgaactttatgttactgcagCTCACAAATGCTTTTTTACATCTGCAAGAA
                               S  Q  M  L  F  Y  I  C  K  K
                                                 |581

         |1761     |1771     |1781     |1791     |1801     |1811
ATTAACTAGTCATCAAATGCTTAGTAGCACAGAAATTCTCAAGTGGTTGCGGGAAATATT
 L  T  S  H  Q  M  L  S  S  T  E  I  L  K  W  L  R  E  I  L
                  |591                          |601

         |1821     |1831     |1841    .    .    .    .    .
GATCTGCAGGAATAAATTTCTTCTTAAAAATAAGgtaagcaaaatgacatatttaaaaaa
 I  C  R  N  K  F  L  L  K  N  K
                  |611

   .    .    .    .    .    .    .    .    .    .    .    .
tggaagaatatttggaatggtaatggtgagagattactaaagtgttttatagccaaatta

   .    .    .    .    .    .    .    .    .    .    .    .
ggttctatttcagcttctccttcctcccaatgttctcaaaaggaaatatgtatgcagagg

   .
acaa


Exon 17 | Start: 135119 | End: 135274 | Length: 155


.    .    .    .    .    .    .    .    .    .    .    .
gtttctagtgaatctccttcaagttggggcatagagattgagaggagaggtttttagga

.    .    .    .    .    .    .    .    .    .    .    .
gagtctcaaacaggaagacaactcaaataagtgtttattcctcttggttgtcagtgcttc

.    .    .    .    .    .         |1851     |1861     |1871
agtaaagcttatttatttatttttttctagCAGGCAGATAGAAGTTCCTGTCACTTTCTC
                               Q  A  D  R  S  S  C  H  F  L
                                                 |621

     |1881     |1891     |1901     |1911     |1921     |1931
CTTTTTTACGGGGTAGGATGTGATATTCCTTCTAGTGGAAATACCAGTCAAATGTCCATG
L  F  Y  G  V  G  C  D  I  P  S  S  G  N  T  S  Q  M  S  M
               |631                          |641
```

```
     |1941     |1951     |1961     |1971     |1981     |1991
GATCATGAAGAATTACTACGTACTCCTGGAGCCTCTCTCCGGAAGGGAAAAGGGAACTCC
D  H  E  E  L  L  R  T  P  G  A  S  L  R  K  G  K  G  N  S
               |651                          |661

     |2001.    .    .    .    .    .    .    .    .
TCTATGgtcagcttcttctgtacttttctgtatcattttatgtgctctgtttgttttct
S  M


.    .    .    .    .    .    .    .    .    .    .    .
gaatgaaatttggtaaatttcatctaggtaatatagtgtaatagtgaaaaactgcttaga

.    .    .    .    .    .    .    .
atctagttctattactgctctttgtggaactttggg
```

Exon 18 | Start: 136459 | End: 136708 | Length: 249

```
.    .    .    .    .    .    .    .    .    .    .    .
aggaaaaagctcttgtgagttattgtatgcggagacacacacacacacacacacacac

.    .    .    .    .    .    .    .    .    .    .    .
acacacacacacacagtttattgcattgttagattttatacataaaattacccaagttgc

.    .    .    .    .    .              |2011     |2021     |2031
aaatatatgtcttccacccttgactctcagGATAGTGCAGCAGGATGCAGCGGAACCCCC
                              D  S  A  A  G  C  S  G  T  P
                                        |671

          |2041     |2051     |2061     |2071     |2081     |2091
CCGATTTGCCGACAAGCCCAGACCAAACTAGAAGTGGCCCTGTACATGTTTCTGTGGAAC
P  I  C  R  Q  A  Q  T  K  L  E  V  A  L  Y  M  F  L  W  N
          |681                          |691

          |2101     |2111     |2121     |2131     |2141     |2151
CCTGACACTGAAGCTGTTCTGGTTGCCATGTCCTGTTTCCGCCACCTCTGTGAGGAAGCA
P  D  T  E  A  V  L  V  A  M  S  C  F  R  H  L  C  E  E  A
          |701                          |711

          |2161     |2171     |2181     |2191     |2201     |2211
GATATCCGGTGTGGGGTGGATGAAGTGTCAGTGCATAACCTCTTGCCCAACTATAACACA
```

```
D  I  R  C  G  V  D  E  V  S  V  H  N  L  L  P  N  Y  N  T
         |721                        |731

         |2221     |2231     |2241     |2251.    .    .    .
TTCATGGAGTTTGCCTCTGTCAGCAATATGATGTCAACAGgtaaatgtgaatagtggttt
F  M  E  F  A  S  V  S  N  M  M  S  T  G
         |741                        |751

    .    .    .    .    .    .    .    .    .    .    .    .
tttttactcagtctgcctcaaagcacatggcatctgattttgagaatgtatttaaggtca

    .    .    .    .    .    .    .    .    .    .    .    .
ctactttgtaagtttacaggggaaattcaagtagcttacttgaaatccttttctgaacaa

    .    .
agtaagatga
```

Exon 19 | Start: 137242 | End: 137315 | Length: 73
BE AWARE: This section overlaps with the following exon

```
.    .    .    .    .    .    .    .    .    .    .    .
ctgtgaggttagtgaaaggaagtttttggctttatcatttgaagcatttgctctgctctt

.    .    .    .    .    .    .    .    .    .    .    .
cctactccttttgggtggagcttatcaggttctccattggcaggcagggctctaagtgca

.    .    .    .    .    .              |2261     |2271     |2281
gtaacttgatttgctgttgtatttgcttagGAAGAGCAGCACTTCAGAAAAGAGTGATGG
                                R  A  A  L  Q  K  R  V  M  A
                                                          |761

         |2291     |2301     |2311     |2321    .    .    .
CACTGCTGAGGCGCATTGAGCATCCCACTGCAGGAAACACTGAGgtatgcccttagcaac
  L  L  R  R  I  E  H  P  T  A  G  N  T  E
                           |771

   .    .    .    .    .    .    .    .    .    .    .    .
agaaacacccctcccaggcgcccaccctcaatttggaagcctcttgttacatatgtgtga

   .    .    .    .    .    .    .    .    .    .    .    .
tcaggaatagcttttgaagtaaatccaagatacgtgcatattacaagtataatatctgag
```

```
   .    .    .
tatttaatatacat
```

Exon 20 | Start: 137547 | End: 137630 | Length: 83

```
.    .    .    .    .    .    .    .    .    .    .    .
aatagcttttgaagtaaatccaagatacgtgcatattacaagtataatatctgagtattt

.    .    .    .    .    .    .    .    .    .    .    .
aatatacatcaagtttgaaacttggctgtagctgattgatgtttagctctagactaagtt

.    .    .    .    .    .         |2331     |2341     |2351
gctttcaagtgataattgccttcattttagGCTTGGGAAGATACACATGCAAAATGGGAA
                             A  W  E  D  T  H  A  K  W  E
                                              |781

     |2361     |2371     |2381     |2391     |2401        .
CAAGCAACAAAGCTAATCCTTAACTATCCAAAAGCCAAAATGGAAGATGGCCAGgtaagt
Q  A  T  K  L  I  L  N  Y  P  K  A  K  M  E  D  G  Q
               |791                          |801

   .    .    .    .    .    .    .    .    .    .    .    .
ctgtaaagttgacttttgtctgttaactgatctgctaaatatatgtacttcactttgata

   .    .    .    .    .    .    .    .    .    .    .    .
atctttcaagagtcgctcagtaaagtaaacatatagctgtgtgaagactgatatttagtt

   .    .    .    .    .
gtggtttatctagacctgtacttt
```

Exon 21 | Start: 139049 | End: 139489 | Length: 440

```
.    .    .    .    .    .    .    .    .    .    .    .
atgtatatggtaattttatgggttgattttaatgtatattttacatttttgtacttttg

.    .    .    .    .    .    .    .    .    .    .    .
tcatggaagaaatgttggataaagcataatttgtcaagtctcaactaattaaggtttaat
```

```
.    .    .    .    .    .     |2411     |2421     |2431
tcatgctttgcacaaaaattttgtgtttagGCTGCTGAAAGCCTTCACAAGACCATTGTT
                              A  A  E  S  L  H  K  T  I  V
                                                     |811

 |2441     |2451     |2461     |2471     |2481     |2491
AAGAGGCGAATGTCCCATGTGAGTGGAGGAGGATCCATAGATTTGTCTGACACAGACTCC
K  R  R  M  S  H  V  S  G  G  G  S  I  D  L  S  D  T  D  S
                    |821                          |831

 |2501     |2511     |2521     |2531     |2541     |2551
CTACAGGAATGGATCAACATGACTGGCTTCCTTTGTGCCCTTGGGGGAGTGTGCCTCCAG
L  Q  E  W  I  N  M  T  G  F  L  C  A  L  G  G  V  C  L  Q
                    |841                          |851

 |2561     |2571     |2581     |2591     |2601     |2611
CAGAGAAGCAATTCTGGCCTGGCAACCTATAGCCCACCCATGGGTCCAGTCAGTGAACGT
Q  R  S  N  S  G  L  A  T  Y  S  P  P  M  G  P  V  S  E  R
                    |861                          |871

 |2621     |2631     |2641     |2651     |2661     |2671
AAGGGTTCTATGATTTCAGTGATGTCTTCAGAGGGAAACGCAGATACACCTGTCAGCAAA
K  G  S  M  I  S  V  M  S  S  E  G  N  A  D  T  P  V  S  K
                    |881                          |891

 |2681     |2691     |2701     |2711     |2721     |2731
TTTATGGATCGGCTGTTGTCCTTAATGGTGTGTAACCATGAGAAAGTGGGACTTCAAATA
F  M  D  R  L  L  S  L  M  V  C  N  H  E  K  V  G  L  Q  I
                    |901                          |911

 |2741     |2751     |2761     |2771     |2781     |2791
CGGACCAATGTTAAGGATCTGGTGGGTCTAGAATTGAGTCCTGCTCTGTATCCAATGCTA
R  T  N  V  K  D  L  V  G  L  E  L  S  P  A  L  Y  P  M  L
                    |921                          |931

 |2801     |2811     |2821     |2831     |2841          .
TTTAACAAATTGAAGAATACCATCAGCAAGTTTTTTGACTCCCAAGGACAGgtaaagtgt
F  N  K  L  K  N  T  I  S  K  F  F  D  S  Q  G  Q
                    |941

.    .    .    .    .    .    .    .    .    .    .    .
tctcttatttttcacctttctctatgaatagagtgacttgtttgaaataagccttttttct

.    .    .    .    .    .    .    .    .    .    .    .
ttcagattatttaaattaggtactcacagtttttaaaaatttccaaaaaattgcagaaag
```

```
.    .    .    .    .
aagagtcatctcaatgtaggg
```

Exon 22 | Start: 139859 | End: 139998 | Length: 139
BE AWARE: This section overlaps with the following exon

```
.    .    .    .    .    .    .    .    .    .    .    .
cgagtgtctgcgtatatctgtatgcttatttggctctatgcctgtgggtgcacttactct

.    .    .    .    .    .    .    .    .    .    .    .
gtgtgtttagatcagtcagtttcatctctctagggggtctgtcttctgggcattgatggc

.    .    .    .    .    .    |2851     |2861     |2871
aaatcattaatgtatttgttctttctttagGTTTTATTGACTGATACCAATACTCAATTT
                              V  L  L  T  D  T  N  T  Q  F
                              |951

|2881     |2891     |2901     |2911     |2921     |2931
GTAGAACAAACCATAGCTATAATGAAGAACTTGCTAGATAATCATACTGAAGGCAGCTCT
V  E  Q  T  I  A  I  M  K  N  L  L  D  N  H  T  E  G  S  S
|961                          |971

|2941     |2951     |2961     |2971     |2981          .    .
GAACATCTAGGGCAAGCTAGCATTGAAACAATGATGTTAAATCTGGTCAGgtaagcattc
E  H  L  G  Q  A  S  I  E  T  M  M  L  N  L  V  R
|981                          |991

    .    .    .    .    .    .    .    .    .    .    .    .
tactgaaatgtagcagaaacattttaagagataagaaaaacctcttacacactgatactg

    .    .    .    .    .    .    .    .    .    .    .    .
gtagtaattgataaaataactggccattctttactgcacacaaactagggtgtgacagta

    .    .    .    .
aggtagccagaagttgtgta
```

Exon 23 | Start: 140284 | End: 140406 | Length: 122

```
.    .    .    .    .    .    .    .    .    .    .    .
gccagaagttgtgtacgttcttttctaaataaatatcttattgttttcaaacttacattt

.    .    .    .    .    .    .    .    .    .    .    .
aattcgttttacttgatgactaaagtatttagaatgccttctcttttgtctatatctgat

.    .    .    .    .    .    |2991     |3001     |3011
aatttttttattgtttctatgtctatatagGTATGTTCGTGTGCTTGGGAATATGGTCCA
                              Y  V  R  V  L  G  N  M  V  H
                                       |1001

|3021     |3031     |3041     |3051     |3061     |3071
TGCAATTCAAATAAAAACGAAACTGTGTCAATTAGTTGAAGTAATGATGGCAAGGAGAGA
 A  I  Q  I  K  T  K  L  C  Q  L  V  E  V  M  M  A  R  R  D
          |1011                          |1021

|3081     |3091     |3101     |3111  .    .    .    .    .
TGACCTCTCATTTTGCCAAGAGATGAAATTTAGgtgagttctcaaaagagcaatgtaggg
 D  L  S  F  C  Q  E  M  K  F  R
          |1031

  .    .    .    .    .    .    .    .    .    .    .    .
tcttgtaaatcttaatatgtccaatgaagtacagaaaaagagtagatatgcggttattgg

  .    .    .    .    .    .    .    .    .    .    .    .
tagaaaggaggacatgaaaagagagcaatttacatgtttgtttttctctacatctcttct

  .
caa
```

Exon 24 | Start: 140866 | End: 140949 | Length: 83

```
.    .    .    .    .    .    .    .    .    .    .    .
tgtgatagcagtatctctttataaagtcgtcatgtcacttaggttatctggcaaattat

.    .    .    .    .    .    .    .    .    .    .    .
ttgcactataagaaatcttacgtgactaaaggtgtgtgtgtggcttcaaaaacattgttt

.    .    .    .    .    .          |3121     |3131     |3141
gctgtttctcttttctccaccattctatagGAATAAGATGGTAGAATACCTGACAGACTG
                              N  K  M  V  E  Y  L  T  D  W
                                    |1041
```

```
       |3151     |3161     |3171     |3181     |3191      .
GGTTATGGGAACATCAAACCAAGCAGCAGATGATGATGTAAAATGTCTTACAAGgtaaaa
 V  M  G  T  S  N  Q  A  A  D  D  D  V  K  C  L  T  R
       |1051                        |1061

   .    .    .    .    .    .    .    .    .    .    .    .
aaagaatgaccttcaagtattagtgggttttactgtgagagttataactacttaattaca

   .    .    .    .    .    .    .    .    .    .    .    .
gctttatacttgtattttgtgtgtatttaaacttttgagatgtcaaacttttgtgtttga

   .    .    .    .    .
aatatgtaaagatgctaatcttta
```

Exon 25 | Start: 142097 | End: 142213 | Length: 116

```
.    .    .    .    .    .    .    .    .    .    .    .
attatttgggttgtgctaataatttgtttaatgaaataggtagttcctaaggtttatatc

.    .    .    .    .    .    .    .    .    .    .    .
tgttagtaagaggtttatttgaggggaagtgaaagaacttgaaagattcatggtctctaa

.    .    .    .    .    .       |3201     |3211     |3221
attttttttttttttttttttttttttcagAGATTTGGACCAGGCAAGCATGGAAGCAGT
                              D  L  D  Q  A  S  M  E  A  V
                                          |1071

   |3231     |3241     |3251     |3261     |3271     |3281
AGTTTCACTTCTAGCTGGTCTCCCTCTGCAGCCTGAAGAAGGAGATGGTGTGGAATTGAT
 V  S  L  L  A  G  L  P  L  Q  P  E  E  G  D  G  V  E  L  M
            |1081                        |1091

   |3291     |3301     |3311   .    .    .    .    .    .
GGAAGCCAAATCACAGTTATTTCTTAAgtaaatttcagtcaccaaaaaacataaagcaaa
 E  A  K  S  Q  L  F  L  K
            |1101

 .    .    .    .    .    .    .    .    .    .    .    .
aagcaaataaagccccccaccacacaaaaaaagcaaagaaataatacccatgacaggact

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

```
aggataggaaaataactgtgttttgtgatttttttaaagaaagtaatatgatcagtg


Exon 26 | Start: 142724 | End: 142905 | Length: 181
BE AWARE: This section overlaps with the following exon



.    .    .    .    .    .    .    .    .    .    .    .
agccaccctggctgattatcgcgagagaggagagaaacagttaacccagggccattcaca

.    .    .    .    .    .    .    .    .    .    .    .
ccatgcacatatgattgttttggaatgtctggttagctttctagttgatacggccttcac

.    .    .    .    .    .          |3321     |3331     |3341
tatgtaaaggtcagtctttttatttctcagATACTTCACATTATTTATGAACCTTTTGAA
                               Y  F  T  L  F  M  N  L  L  N
                                                |1111

      |3351     |3361     |3371     |3381     |3391     |3401
TGACTGCAGTGAAGTTGAAGATGAAAGTGCGCAAACAGGTGGCAGGAAACGTGGCATGTC
 D  C  S  E  V  E  D  E  S  A  Q  T  G  G  R  K  R  G  M  S
                |1121                           |1131

      |3411     |3421     |3431     |3441     |3451     |3461
TCGGAGGCTGGCATCACTGAGGCACTGTACGGTCCTTGCAATGTCAAACTTACTCAATGC
 R  R  L  A  S  L  R  H  C  T  V  L  A  M  S  N  L  L  N  A
                |1141                           |1151

      |3471     |3481     |3491     .    .    .    .    .
CAACGTAGACAGTGGTCTCATGCACTCCATAGgtgagatcaaatgaaagtttcatataga
 N  V  D  S  G  L  M  H  S  I  G
                |1161

 .    .    .    .    .    .    .    .    .    .    .    .
aatacaaaacctagagaactggcatgtaagagaagcaaaaattacttcagcaaggccatg

 .    .    .    .    .    .    .    .    .    .    .    .
ttagtaaatttgcatctgtttgtccacattaggcttaggttaccacaaggatctccagac

 .
aa
```

```
Exon 27 | Start: 143026 | End: 143237 | Length: 211


.    .    .    .    .    .    .    .    .    .    .    .
acgtagacagtggtctcatgcactccataggtgagatcaaatgaaagtttcatatagaaa

.    .    .    .    .    .    .    .    .    .    .    .
tacaaaacctagagaactggcatgtaagagaagcaaaaattacttcagcaaggccatgtt

.    .    .    .    .    .        |3501     |3511     |3521
agtaaatttgcatctgtttgtccacattagGCTTAGGTTACCACAAGGATCTCCAGACAA
                               L  G  Y  H  K  D  L  Q  T  R
                                          |1171

    |3531     |3541     |3551     |3561     |3571     |3581
GAGCTACATTTATGGAAGTTCTGACAAAAATCCTTCAACAAGGCACAGAATTTGACACAC
  A  T  F  M  E  V  L  T  K  I  L  Q  Q  G  T  E  F  D  T  L
             |1181                          |1191

    |3591     |3601     |3611     |3621     |3631     |3641
TTGCAGAAACAGTATTGGCTGATCGGTTTGAGAGATTGGTGGAACTGGTCACAATGATGG
  A  E  T  V  L  A  D  R  F  E  R  L  V  E  L  V  T  M  M  G
             |1201                          |1211

    |3651     |3661     |3671     |3681     |3691     |3701
GTGATCAAGGAGAACTCCCTATAGCGATGGCTCTGGCCAATGTGGTTCCTTGTTCTCAGT
  D  Q  G  E  L  P  I  A  M  A  L  A  N  V  V  P  C  S  Q  W
             |1221                          |1231

     .    .    .    .    .    .    .    .    .    .    .
GGgtaagtgattagagtaagcggggaagaaaagtgcctggcacatagcaaatccttcaga


 .    .    .    .    .    .    .    .    .    .    .    .
atatatttgttcaataaatgtttgttgaatgaattgataaaatttcagagccagaagaaa

 .    .    .    .    .    .    .
gatgtttagttaggtgatttttcagctgtagg


Exon 28 | Start: 145635 | End: 145796 | Length: 161
BE AWARE: This section overlaps with the following exon
```

```
.    .    .    .    .    .    .    .    .    .    .    .
aatctcaggataaatattaatcagtcatcatttgccttaatttagcaagtggttgtcaac

.    .    .    .    .    .    .    .    .    .    .    .
tttgggtttacatttttgctactctttagcttcctacctaagaataaaaatgggattgtt

.    .    .    .    .    .       |3711     |3721     |3731
tgcactaacctgattttgttttgttctcagGATGAACTAGCTCGAGTTCTGGTTACTCTG
                              D  E  L  A  R  V  L  V  T  L
                                        |1241

  |3741     |3751     |3761     |3771     |3781     |3791
TTTGATTCTCGGCATTTACTCTACCAACTGCTCTGGAACATGTTTTCTAAAGAAGTAGAA
F  D  S  R  H  L  L  Y  Q  L  L  W  N  M  F  S  K  E  V  E
           |1251                       |1261

  |3801     |3811     |3821     |3831     |3841     |3851
TTGGCAGACTCCATGCAGACTCTCTTCCGAGGCAACAGCTTGGCCAGTAAAATAATGACA
L  A  D  S  M  Q  T  L  F  R  G  N  S  L  A  S  K  I  M  T
           |1271                       |1281

  |3861        .    .    .    .    .    .    .    .    .
TTCTGTTTCAAGgtttgtatcattcattttgtgtgtatgtgtgtgctgaggtatgtcaag
F  C  F  K


 .    .    .    .    .    .    .    .    .    .    .    .
taatgattatgtacagaatgtgcagggctgattgtcttcttttaaggtaaaatatatgga

 .    .    .    .    .    .    .    .    .
gcaggtataataaactcctattcgtgcatttctgtaggtata
```

Exon 29 | Start: 145942 | End: 146045 | Length: 103

```
.    .    .    .    .    .    .    .    .    .    .    .
tcaaggtttgtatcattcattttgtgtgtatgtgtgtgctgaggtatgtcaagtaatgat

.    .    .    .    .    .    .    .    .    .    .    .
tatgtacagaatgtgcagggctgattgtcttcttttaaggtaaaatatatggagcaggta
```

```
.    .    .    .    .    .    |3871     |3881     |3891
taataaactcctattcgtgcatttctgtagGTATATGGTGCTACCTATCTACAAAAACTC
                               V  Y  G  A  T  Y  L  Q  K  L
                               |1291

|3901     |3911     |3921     |3931     |3941     |3951
CTGGATCCTTTATTACGAATTGTGATCACATCCTCTGATTGGCAACATGTTAGCTTTGAA
L  D  P  L  L  R  I  V  I  T  S  S  D  W  Q  H  V  S  F  E
|1301                          |1311

|3961     |3971    .    .    .    .    .    .    .    .
GTGGATCCTACCAGgtttgtcatcttttcacatagaaccgctgtttttttgtttttttttt
V  D  P  T  R
|1321

   .    .    .    .    .    .    .    .    .    .    .    .
tttgtttgtttgttttactaacactgcatgaagcaaggcaccttctccccttgatcatta

   .    .    .    .    .    .    .    .    .
aaattagtttttaattataaaagttatatacaaatacacgtttc
```

Exon 30 | Start: 159008 | End: 159143 | Length: 135

```
.    .    .    .    .    .    .    .    .    .    .    .
ttttttttttatagttggttgtttaaagattccaatgaagtctacacgttgcacttggct

.    .    .    .    .    .    .    .    .    .    .    .
taatgtctgtataagagtctcttttaaggagtgatttttgttatttgttttaaacaaaag

.    .    .    .    .    .          |3981     |3991     |4001
tgttaggatttttatttttatttttttgtagGTTAGAACCATCAGAGAGCCTTGAGGAAAA
                                 L  E  P  S  E  S  L  E  E  N
                                                |1331

      |4011     |4021     |4031     |4041     |4051     |4061
CCAGCGGAACCTCCTTCAGATGACTGAAAAGTTCTTCCATGCCATCATCAGTTCCTCCTC
 Q  R  N  L  L  Q  M  T  E  K  F  F  H  A  I  I  S  S  S  S
                |1341                          |1351

      |4071     |4081     |4091     |4101          .    .
AGAATTCCCCCCTCAACTTCGAAGTGTGTGCCACTGTTTATACCAGgtatgcttacagtt
 E  F  P  P  Q  L  R  S  V  C  H  C  L  Y  Q
```

```
                |1361

.    .    .    .    .    .    .    .    .    .    .    .
agagattaccattattaatctaaagttaaattatgaagaatgctttatcaaagaaggatc

.    .    .    .    .    .    .    .    .    .    .    .
tagctgctgatggtgtgtggttaactataatactgagtcagtttggatgaataatacatt

.    .    .    .
gagaattgttggaatt
```

Exon 31 | Start: 162962 | End: 163024 | Length: 62

```
.    .    .    .    .    .    .    .    .    .    .    .
tcattcctcaaaattcagttgatttctaatttttgttgattccatttgtgttacatttt

.    .    .    .    .    .    .    .    .    .    .    .
atggtgtaattttatgtacaagccaacattgtttttgttgctgtatgtagtcggtgctgt

.    .    .    .    .    .    |4111     |4121     |4131
gacttgtttgtgctcatctctgttctgtagGCAACTTGCCACTCCCTACTGAATAAAGCT
                              A  T  C  H  S  L  L  N  K  A
                              |1371

|4141     |4151     |4161     |4171  .    .    .    .    .
ACAGTAAAAGAAAAAAAGGAAAACAAAAAATCAgtaagtttggagaacttttattagct
T  V  K  E  K  K  E  N  K  K  S
|1381                          |1391

  .    .    .    .    .    .    .    .    .    .    .    .
gtttctttcaaagcaaaacaaaaatctttgctgtttgttaagaatatcttcacttcagc

  .    .    .    .    .    .    .    .    .    .    .    .
ctatttgaccttcactgtaaaatcattctactaattctggcacaaaatagctttcatttc

  .
aat
```

Exon 32 | Start: 168368 | End: 168526 | Length: 158

```
.    .    .    .    .    .    .    .    .    .    .    .
gttttgggagaagaaaaaaatagaaatatgtcattcatgaggactgattgattcagagtt

.    .    .    .    .    .    .    .    .    .    .    .
tttatgcaaagtttgacctttgaactctttgttttcatgtctttatattaattcaaacct

.    .    .    .    .    .           |4181     |4191     |4201
tatactcaattctcaactccttgtttttagGTGGTTAGCCAGCGTTTCCCTCAGAACAGC
                              V  V  S  Q  R  F  P  Q  N  S
                                                        |1401

       |4211     |4221     |4231     |4241     |4251     |4261
ATCGGTGCAGTAGGAAGTGCCATGTTCCTCAGATTTATCAATCCTGCCATTGTCTCACCG
I  G  A  V  G  S  A  M  F  L  R  F  I  N  P  A  I  V  S  P
                           |1411                       |1421

       |4271     |4281     |4291     |4301     |4311     |4321
TATGAAGCAGGGATTTTAGATAAAAAGCCACCACCTAGAATCGAAAGGGGCTTGAAGTTA
Y  E  A  G  I  L  D  K  K  P  P  P  R  I  E  R  G  L  K  L
                           |1431                       |1441

       |4331 .    .    .    .    .    .    .    .    .    .
ATGTCAAAGgtgaattattttgataatctagctatcttaaattccccttccaactaaatt
M  S  K


   .    .    .    .    .    .    .    .    .    .    .    .
ttcagcttttcttacagtacttcctcttacatttatatttgaaataccctatggttttca

   .    .    .    .    .    .    .    .
gttatgtgcttttgttttatttgtttatattacaaagga


Exon 33 | Start: 169056 | End: 169153 | Length: 97


.    .    .    .    .    .    .    .    .    .    .    .
aaaataatttatagaatgaggaatgtttgatttttaagtactagcagaaattatatcaat

.    .    .    .    .    .    .    .    .    .    .    .
gagaaaattcatgtttttaaagaatgtcttaatgtatagacttcatacaataaataatct
```

```
.    .    .    .    .    .           |4341     |4351     |4361
gattatttataaccctgttttattgtgtagATACTTCAGAGTATTGCCAATCATGTTCTC
                              I  L  Q  S  I  A  N  H  V  L
                                                 |1451

        |4371     |4381     |4391     |4401     |4411     |4421
TTCACAAAAGAAGAACATATGCGGCCTTTCAATGATTTTGTGAAAAGCAACTTTGATGCA
F  T  K  E  E  H  M  R  P  F  N  D  F  V  K  S  N  F  D  A
                 |1461                          |1471

           .    .    .    .    .    .    .    .    .    .
GCACGCAGgtaattttcttgccacttactcagttgctctgtttgaatcaaatattttcgg
A  R  R

  .    .    .    .    .    .    .    .    .    .    .    .
tttcacataaatccatgtacctgttttacatgaagttcctgtgtaagtttttttctttc

  .    .    .    .    .    .    .    .
ctgctctaggtcaagacatagcttgtcttattttattt
```

Exon 34 | Start: 170393 | End: 170539 | Length: 146

```
.    .    .    .    .    .    .    .    .    .    .    .
ctttgtctaatgtcaagtcacattgtgtgaacaagccctccatatttgtaatcttagtta

.    .    .    .    .    .    .    .    .    .    .    .
cttcacaaagttacttcttataaatttaattcaaacataagtctgggtgtatctggtgtt

.    .    .    .    .    .    |4431     |4441     |4451
gaaaattctaatgactttgcatttttgaagGTTTTTCCTTGATATAGCATCTGATTGTCC
                               F  F  L  D  I  A  S  D  C  P
                                        |1481

|4461     |4471     |4481     |4491     |4501     |4511
TACAAGTGATGCAGTAAATCATAGTCTTTCCTTCATAAGTGACGGCAATGTGCTTGCTTT
 T  S  D  A  V  N  H  S  L  S  F  I  S  D  G  N  V  L  A  L
          |1491                          |1501

|4521     |4531     |4541     |4551     |4561     |4571
ACATCGTCTACTCTGGAACAATCAGGAGAAAATTGGGCAGTATCTTTCCAGCAACAGgta
 H  R  L  L  W  N  N  Q  E  K  I  G  Q  Y  L  S  S  N  R
```

```
          |1511                          |1521

 .    .    .    .    .    .    .    .    .    .    .    .
agatttcccagtcatggggatagtgaacactctccgtttaaatttagattaatacaatta

 .    .    .    .    .    .    .    .    .    .    .    .
ttggtcatgaatagtgctttttactttgcatcttcttggactaagaattatggtttagaa

 .    .    .    .    .    .
agagaaagattctttttttcaaaaaaa
```

Exon 35 | Start: 171735 | End: 171881 | Length: 146

```
.    .    .    .    .    .    .    .    .    .    .    .
gattgaagtagacatggtcctgaggtctttttggtgctgtttacaaatcagctgacagta

.    .    .    .    .    .    .    .    .    .    .    .
aaaggaaaagcaaccagttacaagttaaagaaatgtgtagtgctaaatgtgaactgctaa

.    .    .    .    .    .       |4581     |4591     |4601
ttttttttctaagtagtttgctgtatctagGGATCATAAAGCTGTTGGAAGACGACCTTT
                              D  H  K  A  V  G  R  R  P  F
                                          |1531

   |4611     |4621     |4631     |4641     |4651     |4661
TGATAAGATGGCAACACTTCTTGCATACCTGGGTCCTCCAGAGCACAAACCTGTGGCAGA
 D  K  M  A  T  L  L  A  Y  L  G  P  P  E  H  K  P  V  A  D
            |1541                          |1551

   |4671     |4681     |4691     |4701     |4711     |4721
TACACACTGGTCCAGCCTTAACCTTACCAGTTCAAAGTTTGAGGAATTTATGACTAGgta
 T  H  W  S  S  L  N  L  T  S  S  K  F  E  E  F  M  T  R
            |1561                          |1571

 .    .    .    .    .    .    .    .    .    .    .    .
aagtacaaccttgaaatagttgattgctttctttttggttgagaaggagagtttgccacc

 .    .    .    .    .    .    .    .    .    .    .    .
aggccacttgttagatatgatagaagactatgaggaaagatgtatttaataatcacattg

 .    .    .    .    .    .
ccatgtttggggaatccaactatatat
```

```
Exon 36 | Start: 175253 | End: 175363 | Length: 110


.    .    .    .    .    .    .    .    .    .    .    .
gtgcatgttgccaaattacccttagaatgcctgttgcttttaaaatatttttcatttt

.    .    .    .    .    .    .    .    .    .    .    .
agtattttattgtttatccaattatagacttttttacatactcagtagacaacataaagc

.    .    .    .    .    .          |4731     |4741     |4751
ctcataattactctgttatttttctttagGCATCAGGTACATGAAAAAGAAGAATTCAA
                              H  Q  V  H  E  K  E  E  F  K
                                             |1581

      |4761     |4771     |4781     |4791     |4801     |4811
GGCTTTGAAAACGTTAAGTATTTTCTACCAAGCTGGGACTTCCAAAGCTGGGAATCCTAT
 A  L  K  T  L  S  I  F  Y  Q  A  G  T  S  K  A  G  N  P  I
                |1591                          |1601

      |4821     |4831    .    .    .    .    .    .    .
TTTTTATTATGTTGCACGGAGgtaagaaatactatgttttgggtctcttaacagaatttt
 F  Y  Y  V  A  R  R
                |1611

.    .    .    .    .    .    .    .    .    .    .    .
ttaaattatagcaaatatagagagatggcaagtttggtttttcccagttgacttaacagg

.    .    .    .    .    .    .    .    .    .    .
aattgaagacaagtttacttgggagcatatagcagggtaaatagcctgcgt


Exon 37 | Start: 235844 | End: 236276 | Length: 432


.    .    .    .    .    .    .    .    .    .    .    .
actgatttaaaaaatgaatccagactttgaagaattgttttatattattctctctagaaa

.    .    .    .    .    .    .    .    .    .    .    .
atgaatcataaaataaaattgattagtggcatctgtatatttatttttaaacactgctaat
```

```
.    .    .    .    .    .          |4841     |4851     |4861
aatctttgtctttttgtcatttccttagGTTCAAAACTGGTCAAATCAATGGTGATTT
                               F  K  T  G  Q  I  N  G  D  L
                                                          |1621

     |4871     |4881     |4891     |4901     |4911     |4921
GCTGATATACCATGTCTTACTGACTTTAAAGCCATATTATGCAAAGCCATATGAAATTGT
 L  I  Y  H  V  L  L  T  L  K  P  Y  Y  A  K  P  Y  E  I  V
                         |1631                     |1641

     |4931     |4941     |4951     |4961     |4971     |4981
AGTGGACCTTACCCATACCGGGCCTAGCAATCGCTTTAAAACAGACTTTCTCTCTAAGTG
 V  D  L  T  H  T  G  P  S  N  R  F  K  T  D  F  L  S  K  W
                         |1651                     |1661

     |4991     |5001     |5011     |5021     |5031     |5041
GTTTGTTGTTTTTCCTGGCTTTGCTTACGACAACGTCTCCGCAGTCTATATCTATAACTG
 F  V  V  F  P  G  F  A  Y  D  N  V  S  A  V  Y  I  Y  N  C
                         |1671                     |1681

     |5051     |5061     |5071     |5081     |5091     |5101
TAACTCCTGGGTCAGGGAGTACACCAAGTATCATGAGCGGCTGCTGACTGGCCTCAAAGG
 N  S  W  V  R  E  Y  T  K  Y  H  E  R  L  L  T  G  L  K  G
                         |1691                     |1701

     |5111     |5121     |5131     |5141     |5151     |5161
TAGCAAAAGGCTTGTTTTCATAGACTGTCCTGGGAAACTGGCTGAGCACATAGAGCATGA
 S  K  R  L  V  F  I  D  C  P  G  K  L  A  E  H  I  E  H  E
                         |1711                     |1721

     |5171     |5181     |5191     |5201     |5211     |5221
ACAACAGAAACTACCTGCTGCCACCTTGGCTTTAGAAGAGGACCTGAAGGTATTCCACAA
 Q  Q  K  L  P  A  A  T  L  A  L  E  E  D  L  K  V  F  H  N
                         |1731                     |1741

     |5231     |5241     |5251     |5261       .    .    .
TGCTCTCAAGCTAGCTCACAAAGACACCAAAGTTTCTATTAAAgtaagttccagtctgtg
 A  L  K  L  A  H  K  D  T  K  V  S  I  K
                         |1751

  .    .    .    .    .    .    .    .    .    .    .    .
ttttgtaaacgattcattgcttttcttgactaactagactatatcctggcctccctaggt

  .    .    .    .    .    .    .    .    .    .    .    .
gtcctacccctatagtggtgtataaaatgtcacgtaaggctgtcgcggtggctcacgcct
```

```
  .    .    .
gtaatccaagcac
```

Exon 38 | Start: 237523 | End: 237863 | Length: 340

```
.    .    .    .    .    .    .    .    .    .    .    .
attactgaaccatttgaatatacaatggtgggaactcttccttaaatggcatagtgtttt

.    .    .    .    .    .    .    .    .    .    .    .
gtttggttggttggtttctggagccttttagaattttatgtaaaagagtttaattcttct

.    .    .    .    .    .      |5271     |5281     |5291
ccacttcaccccgtcaccaccactttccagGTTGGTTCTACTGCTGTCCAAGTAACTTCA
                              V  G  S  T  A  V  Q  V  T  S
                                         |1761

  |5301     |5311     |5321     |5331     |5341     |5351
GCAGAGCGAACAAAAGTCCTAGGGCAATCAGTCTTTCTAAATGACATTTATTATGCTTCG
A  E  R  T  K  V  L  G  Q  S  V  F  L  N  D  I  Y  Y  A  S
           |1771                       |1781

  |5361     |5371     |5381     |5391     |5401     |5411
GAAATTGAAGAAATCTGCCTAGTAGATGAGAACCAGTTCACCTTAACCATTGCAAACCAG
E  I  E  E  I  C  L  V  D  E  N  Q  F  T  L  T  I  A  N  Q
           |1791                       |1801

  |5421     |5431     |5441     |5451     |5461     |5471
GGCACGCCGCTCACCTTCATGCACCAGGAGTGTGAAGCCATTGTCCAGTCTATCATTCAT
G  T  P  L  T  F  M  H  Q  E  C  E  A  I  V  Q  S  I  I  H
           |1811                       |1821

  |5481     |5491     |5501     |5511     |5521     |5531
ATCCGGACCCGCTGGGAACTGTCACAGCCCGACTCTATCCCCCAACACACCAAGATTCGG
I  R  T  R  W  E  L  S  Q  P  D  S  I  P  Q  H  T  K  I  R
           |1831                       |1841

  |5541     |5551     |5561     |5571     |5581     |5591
CCAAAAGATGTCCCTGGGACACTGCTCAATATCGCATTACTTAATTTAGGCAGTTCTGAC
P  K  D  V  P  G  T  L  L  N  I  A  L  L  N  L  G  S  S  D
           |1851                       |1861

  |5601        .    .    .    .    .    .    .    .
```

```
CCGAGTTTACGgtaggttttttaaaattctcttcagtttgatttggggtttgttgctttt
P  S  L  R


.    .    .    .    .    .    .    .    .    .    .    .
aaaatgagaccatttaatgaattttaaaacagcctctaccttaatattgtaaattggaag

.    .    .    .    .    .    .    .    .
gtatgcagtgttggttaaccactgtgacctcatcaagttgt
```

Exon 39 | Start: 240320 | End: 240522 | Length: 202

```
.    .    .    .    .    .    .    .    .    .    .    .
aattataacatcttatttctaactgatcataaaatttaaaaatagttgatcatactttgt

.    .    .    .    .    .    .    .    .    .    .    .
aacagaatcacaaattgtatgttatgaaaaaattttggaactataaggaaaaatacgttt

.    .    .    .    .    .     |5611     |5621     |5631
taaaacaacttcatttgtgttttctcctagGTCAGCTGCCTATAATCTTCTGTGTGCCTT
                               S  A  A  Y  N  L  L  C  A  L
                               |1871

 |5641     |5651     |5661     |5671     |5681     |5691
AACTTGTACCTTTAATTTAAAAATCGAGGGCCAGTTACTAGAGACATCAGGTTTATGTAT
 T  C  T  F  N  L  K  I  E  G  Q  L  L  E  T  S  G  L  C  I
 |1881                         |1891

 |5701     |5711     |5721     |5731     |5741     |5751
CCCTGCCAACAACACCCTCTTTATTGTCTCTATTAGTAAGACACTGGCAGCCAATGAGCC
 P  A  N  N  T  L  F  I  V  S  I  S  K  T  L  A  A  N  E  P
 |1901                         |1911

 |5761     |5771     |5781     |5791     |5801     |5811 .
ACACCTCACGTTAGAATTTTTGGAAGAGTGTATTTCTGGATTTAGCAAATCTAgtaagta
 H  L  T  L  E  F  L  E  E  C  I  S  G  F  S  K  S  S
 |1921                         |1931

  .    .    .    .    .    .    .    .    .    .    .    .
atgataatttctttaatactaacaattattctaagagaattcaaagaaaacccttttcat

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

```
ttcagaattttccagtgaagactttcacttacatttttacttttttttcctcttctgattt

   .    .    .    .    .
tatatctgtggtatcctgtaact


Exon 40 | Start: 244862 | End: 245055 | Length: 193


.    .    .    .    .    .    .    .    .    .    .    .
aaaatatatttgccaagtgtcttttctccaggcctgattctaggtaatagtctttaccttt

.    .    .    .    .    .    .    .    .    .    .    .
ttaccatttttttccccgaattctttatgttaaataattgttgatgtgattttcattgacc

.    .    .    .    .    .              |5821     |5831     |5841
atcacatgctaatagtgtatttttttccagGTATTGAATTGAAACACCTTTGTTTGGAAT
                                 I  E  L  K  H  L  C  L  E  Y
                                       |1941

        |5851     |5861     |5871     |5881     |5891     |5901
ACATGACTCCATGGCTGTCAAATCTAGTTCGTTTTTGCAAGCATAATGATGATGCCAAAC
  M  T  P  W  L  S  N  L  V  R  F  C  K  H  N  D  D  A  K  R
        |1951                         |1961

        |5911     |5921     |5931     |5941     |5951     |5961
GACAAAGAGTTACTGCTATTCTTGACAAGCTGATAACAATGACCATCAATGAAAAACAGA
  Q  R  V  T  A  I  L  D  K  L  I  T  M  T  I  N  E  K  Q  M
        |1971                         |1981

        |5971     |5981     |5991     |6001     .    .    .
TGTACCCATCTATTCAAGCAAAAATATGGGGAAGCCTTGGGCAGgtattgagtttgctca
  Y  P  S  I  Q  A  K  I  W  G  S  L  G  Q
        |1991                         |2001

   .    .    .    .    .    .    .    .    .    .    .    .
aatatttatctagtatctcctttgtgcacatatttatctggtgccacattgggcaaagca

   .    .    .    .    .    .    .    .    .    .    .    .
ctgcgctagacactagggatagagttgtaaaaaacacagtttcctccttcagaaagcatg

   .    .    .
tagacactcaccca
```

```
Exon 41 | Start: 246357 | End: 246497 | Length: 140
BE AWARE: This section overlaps with the following exon



.    .    .    .    .    .    .    .    .    .    .    .
ctgacaggcctgtaaataaaatctagtatttttgaggcctcaggtaaaatagaatttca

.    .    .    .    .    .    .    .    .    .    .    .
tattgattaggctgttccaatgaatatttttaattaaaaattaaattggtagagtgatt

.    .    .    .    .    .        |6011     |6021     |6031
aaaaacatgttattttccttcttcaactagATTACAGATCTGCTTGATGTTGTACTAGAC
                              I  T  D  L  L  D  V  V  L  D
                                                      |2011

    |6041     |6051     |6061     |6071     |6081     |6091
AGTTTCATCAAAACCAGTGCAACAGGTGGCTTGGGATCAATAAAAGCTGAGGTGATGGCA
S  F  I  K  T  S  A  T  G  G  L  G  S  I  K  A  E  V  M  A
                        |2021                           |2031

    |6101     |6111     |6121     |6131     |6141      .
GATACTGCTGTAGCTTTGGCTTCTGGAAATGTGAAATTGGTTTCAAGCAAGgtaatcact
D  T  A  V  A  L  A  S  G  N  V  K  L  V  S  S  K
                        |2041

.    .    .    .    .    .    .    .    .    .    .    .
tttcttttgccttctgtactatagcatatctgttttatcatcaggaggtttttgttttg

.    .    .    .    .    .    .    .    .    .    .    .
taattacttttaaattaaactgaacttttttgtgctaaaactttgagtcccatgttttt

.    .    .    .    .
tttttaaaaaaaaaaatcctg



Exon 42 | Start: 246659 | End: 246938 | Length: 279



.    .    .    .    .    .    .    .    .    .    .    .
tcttttgccttctgtactatagcatatctgttttatcatcaggaggtttttgttttgta
```

```
.    .    .    .    .    .    .    .    .    .    .    .
attactttaaattaaactgaacttttttgtgctaaaactttgagtcccatgttttttt

.    .    .    .    .    .        |6151     |6161     |6171
tttaaaaaaaaaaatcctgcttctttacagGTTATTGGAAGGATGTGCAAAATAATTGAC
                              V  I  G  R  M  C  K  I  I  D
                                 |2051

   |6181     |6191     |6201     |6211     |6221     |6231
AAGACATGCTTATCTCCAACTCCTACTTTAGAACAACATCTTATGTGGGATGATATTGCT
K  T  C  L  S  P  T  P  T  L  E  Q  H  L  M  W  D  D  I  A
   |2061                        |2071

   |6241     |6251     |6261     |6271     |6281     |6291
ATTTTAGCACGCTACATGCTGATGCTGTCCTTCAACAATTCCCTTGATGTGGCAGCTCAT
I  L  A  R  Y  M  L  M  L  S  F  N  N  S  L  D  V  A  A  H
   |2081                        |2091

   |6301     |6311     |6321     |6331     |6341     |6351
CTTCCCTACCTCTTCCACGTTGTTACTTTCTTAGTAGCCACAGGTCCGCTCTCCCTTAGA
L  P  Y  L  F  H  V  V  T  F  L  V  A  T  G  P  L  S  L  R
   |2101                        |2111

   |6361     |6371     |6381     |6391     |6401     |6411
GCTTCCACACATGGACTGGTCATTAATATCATTCACTCTCTGTGTACTTGTTCACAGCTT
A  S  T  H  G  L  V  I  N  I  I  H  S  L  C  T  C  S  Q  L
   |2121                        |2131

   |6421     .    .    .    .    .    .    .    .    .
CATTTTAGTGgtaagttctaggaaaggaatttgtgtttaccagttcctttctccatttta
H  F  S  E
   |2141

    .    .    .    .    .    .    .    .    .    .    .
cttcacctgatcaatatagattatcttatttatgtttgtgctctaacaccaagttgctaa

    .    .    .    .    .    .    .    .
tttaagcctccagtaatgacatgaaatattaccaaaaaga
```

Exon 43 | Start: 247392 | End: 247606 | Length: 214
BE AWARE: This section overlaps with the following exon

```
.    .    .    .    .    .    .    .    .    .    .    .
atacaatgtatctagaggtttgatttagggaacatgattatgtaatttttatatggtatt

.    .    .    .    .    .    .    .    .    .    .    .
caaattttctaaattcaaaatgaaacatggaactttagaaattaaaaagtaatattttct

.    .    .    .    .    .        |6431     |6441     |6451
gtctttacttgttcctttattctcttacagAAGAGACCAAGCAAGTTTTGAGACTCAGTC
                                E  T  K  Q  V  L  R  L  S  L
                                                     |2151

   |6461     |6471     |6481     |6491     |6501     |6511
TGACAGAGTTCTCATTACCCAAATTTTACTTGCTGTTTGGCATTAGCAAAGTCAAGTCAG
  T  E  F  S  L  P  K  F  Y  L  L  F  G  I  S  K  V  K  S  A
                      |2161                          |2171

   |6521     |6531     |6541     |6551     |6561     |6571
CTGCTGTCATTGCCTTCCGTTCCAGTTACCGGGACAGGTCATTCTCTCCTGGCTCCTATG
  A  V  I  A  F  R  S  S  Y  R  D  R  S  F  S  P  G  S  Y  E
                      |2181                          |2191

   |6581     |6591     |6601     |6611     |6621     |6631
AGAGAGAGACTTTTGCTTTGACATCCTTGGAAACAGTCACAGAAGCTTTGTTGGAGATCA
  R  E  T  F  A  L  T  S  L  E  T  V  T  E  A  L  L  E  I  M
                      |2201                          |2211

   |6641 .    .    .    .    .    .    .    .    .    .    .
TGGAGgtatagaagccaaaatgataagaaactaagttaaaatctttttttaaaaatatgt
  E


    .    .    .    .    .    .    .    .    .    .    .
taatactatatagaagaaatattggtttattgtgctattttgtacttaatgcttaaataa

    .    .    .    .    .    .    .
aaacacttgcatggactgtgttattggtaacaggt


Exon 44 | Start: 247843 | End: 247904 | Length: 61
BE AWARE: This section overlaps with the following exon


.    .    .    .    .    .    .    .    .    .    .    .
gtgctattttgtacttaatgcttaaataaaaacacttgcatggactgtgttattggtaac
```

```
.    .    .    .    .    .    .    .    .    .    .    .
aggtcacttaatgacatcataataaacattatttaaacagttctaaaaacatttatgtac

.    .    .    .    .    .           |6651     |6661     |6671
aatatgtattcagagtatccccttttttagGCATGCATGAGAGATATTCCAACGTGCAAG
                              A  C  M  R  D  I  P  T  C  K
                                                |2221

        |6681     |6691     |6701   .    .    .    .    .
TGGCTGGACCAGTGGACAGAACTAGCTCAAAGgtatgtcctaaattaaatataagttgta
W  L  D  Q  W  T  E  L  A  Q  R
                 |2231

 .    .    .    .    .    .    .    .    .    .    .    .
aaaatatgcatattgttgaaaatacagctattactgtatgatcaatgttataatttatta

 .    .    .    .    .    .    .    .    .    .    .    .
tttagtatatataaacacaaaggtttttataagttctgtggatcttttaattgcagattt

 .
gc
```

Exon 45 | Start: 248049 | End: 248163 | Length: 114

```
.    .    .    .    .    .    .    .    .    .    .    .
tcaaaggtatgtcctaaattaaatataagttgtaaaaatatgcatattgttgaaaataca

.    .    .    .    .    .    .    .    .    .    .    .
gctattactgtatgatcaatgttataatttattatttagtatatataaacacaaaggttt

.    .    .    .    .    .          |6711     |6721     |6731
ttataagttctgtggatcttttaattgcagATTTGCATTCCAATATAATCCATCCCTGCA
                              F  A  F  Q  Y  N  P  S  L  Q
                                                |2241

      |6741     |6751     |6761     |6771     |6781     |6791
ACCAAGAGCTCTTGTTGTCTTTGGGTGTATTAGCAAACGAGTGTCTCATGGGCAGATAAA
 P  R  A  L  V  V  F  G  C  I  S  K  R  V  S  H  G  Q  I  K
                 |2251                          |2261

      |6801     |6811        .    .    .    .    .    .    .
```

```
GCAGATAATCCGTATTCTTAGCAAGgtacctgttccgccctcacttctcccaaatattta
 Q  I  I  R  I  L  S  K
               |2271

    .    .    .    .    .    .    .    .    .    .    .    .
tggttctcaagttgtaaagcatatctttcatttttctaaaagacgtttaaatttgaggtc

    .    .    .    .    .    .    .    .    .    .    .
aatgaaatatcttatatgttacttattaagcctttaaaatgtattttgattattt
```

Exon 46 | Start: 248728 | End: 248829 | Length: 101

```
.    .    .    .    .    .    .    .    .    .    .    .
taagctagctaccaagatcaccatagcatgagaaatcattctagcatttattaaataagt

.    .    .    .    .    .    .    .    .    .    .    .
aaatgttcctgaattcattccgagattcagtttaggagttaatgttttatttcaatgaaa

.    .    .    .    .    .     |6821     |6831     |6841
gtaaaataaaaaattctgttttcctaaaagGCACTTGAGAGTTGCTTAAAAGGACCTGAC
                              A  L  E  S  C  L  K  G  P  D
                                                    |2281

 |6851     |6861     |6871     |6881     |6891     |6901
ACTTACAACAGTCAAGTTCTGATAGAAGCTACAGTAATAGCACTAACCAAATTACAGCCA
T  Y  N  S  Q  V  L  I  E  A  T  V  I  A  L  T  K  L  Q  P
                     |2291                          |2301

 |6911     |6921.    .    .    .    .    .    .    .
CTTCTTAATAAGgtaattactgtatagaaaatgagtgcattcattttgggtatcagtgtt
L  L  N  K

 .    .    .    .    .    .    .    .    .    .    .    .
gaatgttactttctttcaaagagtttagaaaataagatgaattgagaataagttataaag

 .    .    .    .    .    .    .    .    .
aaaaaactatagttaaagtagaacctcttaaagtttagttgt
```

Exon 47 | Start: 250529 | End: 250669 | Length: 140

```
.    .    .    .    .    .    .    .    .    .    .    .
tgaagagcttactcatatctttatcttccccaaaagagaaaacatgggtaatttaggaag

.    .    .    .    .    .    .    .    .    .    .    .
ataagctgctttatttttaactgcagtgtgttttgaaagagactatgtcatgattcatct

.    .    .    .    .    .              |6931     |6941     |6951
tactagcctcaaacatatcttctttgccagGACTCGCCTCTGCACAAAGCCCTCTTTTGG
                               D  S  P  L  H  K  A  L  F  W
                                        |2311

          |6961     |6971     |6981     |6991     |7001     |7011
GTAGCTGTGGCTGTGCTGCAGCTTGATGAGGTCAACTTGTATTCAGCAGGTACCGCACTT
V  A  V  A  V  L  Q  L  D  E  V  N  L  Y  S  A  G  T  A  L
          |2321                       |2331

          |7021     |7031     |7041     |7051     |7061 .
CTTGAACAAAACCTGCATACTTTAGATAGTCTCCGTATATTCAATGACAAGgtaagcaaa
L  E  Q  N  L  H  T  L  D  S  L  R  I  F  N  D  K
          |2341                       |2351

.    .    .    .    .    .    .    .    .    .    .    .
ctttgccttgaggttcctagattactcaaatttagtactcttccatcttttcttgttgct

.    .    .    .    .    .    .    .    .    .    .    .
attcttttaaaatcacaagaagtccataacttaagtaggaatttgtataatgtaacttat

.    .    .    .    .
tgtgagtatatttccttacca


Exon 48 | Start: 253033 | End: 253159 | Length: 126


.    .    .    .    .    .    .    .    .    .    .    .
tctgtggttttctgcagtcaactgaaaataatttctctcaaattgaaaggattacttatc

.    .    .    .    .    .    .    .    .    .    .    .
ttgtcatactattgaacacaaaattaagtgagcctttaaagaaagctactgtgtgaacct

.    .    .    .    .    .              |7071     |7081     |7091
```

```
catcaaccatctcatgattatctttaatagAGTCCAGAGGAAGTATTTATGGCAATCCGG
                            S  P  E  E  V  F  M  A  I  R
                                                  |2361

        |7101     |7111     |7121     |7131     |7141     |7151
AATCCTCTGGAGTGGCACTGCAAGCAAATGGATCATTTTGTTGGACTCAATTTCAACTCT
N  P  L  E  W  H  C  K  Q  M  D  H  F  V  G  L  N  F  N  S
                  |2371                       |2381

        |7161     |7171     |7181        .    .    .    .
AACTTTAACTTTGCATTGGTTGGACACCTTTTAAAAGgtaaaaaagccttatttagaata
N  F  N  F  A  L  V  G  H  L  L  K  G
                  |2391

 .    .    .    .    .    .    .    .    .    .    .    .
tttttatgaagtactattaagaaaccagaagtaatttgaataagtgattacttgaaataa

 .    .    .    .    .    .    .    .    .    .    .    .
attgaagtaagttagcccttatgtcttactttaaatgcaaactaggccaggcgtggtggc

 .    .
tcacgtc
```

Exon 49 | Start: 259144 | End: 259275 | Length: 131

```
.    .    .    .    .    .    .    .    .    .    .    .
ttttaccttcccaaatggctattcttggaaagtaggagttatatttcctttccttgcaga

.    .    .    .    .    .    .    .    .    .    .    .
gttgttagtcagggaagaagacctcagcagatgcttgttcaaaaaattaattcttacttg

.    .    .    .    .    .     |7191     |7201     |7211
tttgtttgtttgtttgtttgtttttgtagGGTACAGGCATCCTTCACCTGCTATTGTTG
                               Y  R  H  P  S  P  A  I  V  A
                                        |2401

 |7221     |7231     |7241     |7251     |7261     |7271
CAAGAACAGTCAGAATTTTACATACACTACTAACTCTGGTTAACAAACACAGAAATTGTG
  R  T  V  R  I  L  H  T  L  L  T  L  V  N  K  H  R  N  C  D
           |2411                       |2421

 |7281     |7291     |7301     |7311     |7321.    .    .
```

```
ACAAATTTGAAGTGAATACACAGAGCGTGGCCTACTTAGCAGgtaaaaacacaaaataaa
  K  F  E  V  N  T  Q  S  V  A  Y  L  A  A
           |2431                      |2441

 .    .    .    .    .    .    .    .    .    .    .    .
caaaattaatcttgctacatctatatataaggatcacccaaaaagtacaaatacctatag

 .    .    .    .    .    .    .    .    .    .    .    .
gtttttttggcggttgcgtggcagagcagaaagttcacagtctagtcctttagtggtggtt

 .    .    .
acaattttgaga
```

Exon 50 | Start: 260207 | End: 260342 | Length: 135

```
.    .    .    .    .    .    .    .    .    .    .    .
ctctgtatatttcacatttatgtagtcttccaaaatatgtgcacatttaacaggtactat

.    .    .    .    .    .    .    .    .    .    .    .
gctctttaggagactgtaagaagttcatcctgttttaagtcacacttgtgatttgttaaa

.    .    .    .    .    .              |7331     |7341     |7351
ttttttaacctgccaccgttttccttttagCTTTACTTACAGTGTCTGAAGAAGTTCGAA
                                L  L  T  V  S  E  E  V  R  S
                                                           |2451

         |7361     |7371     |7381     |7391     |7401     |7411
GTCGCTGCAGCCTAAAACATAGAAAGTCACTTCTTCTTACTGATATTTCAATGGAAAATG
  R  C  S  L  K  H  R  K  S  L  L  L  T  D  I  S  M  E  N  V
                            |2461                      |2471

         |7421     |7431     |7441     |7451      .    .
TTCCTATGGATACATATCCCATTCATCATGGTGACCCTTCCTATAGgtaagtggatttac
  P  M  D  T  Y  P  I  H  H  G  D  P  S  Y  R
                            |2481

.    .    .    .    .    .    .    .    .    .    .    .
tctcctataattacataatcataatcaagtttcaattttccaactaatggaggcaagcag

.    .    .    .    .    .    .    .    .    .    .    .
cagagtaatctagaaggtaacatgggagaaatctagagatggcctaggaagagtaagtga
```

```
.    .    .    .
aactcattttataaat
```

Exon 51 | Start: 262281 | End: 262438 | Length: 157

```
.    .    .    .    .    .    .    .    .    .    .    .
agagtttgtatcctaaagccctttaaagtgcaattttaaaattaattgattgctgttgtt

.    .    .    .    .    .    .    .    .    .    .    .
aggaaataggacagccacttggaaggagcaaacgatggttgtatttgtcaccatattaat

.    .    .    .    .    .       |7461     |7471     |7481
tgatttttctctattgttttcatctttcagGACACTAAAGGAGACTCAGCCATGGTCCTC
                              T  L  K  E  T  Q  P  W  S  S
                                          |2491

   |7491     |7501     |7511     |7521     |7531     |7541
TCCCAAAGGTTCTGAAGGATACCTTGCAGCCACCTATCCAACTGTCGGCCAGACCAGTCC
 P  K  G  S  E  G  Y  L  A  A  T  Y  P  T  V  G  Q  T  S  P
             |2501                       |2511

   |7551     |7561     |7571     |7581     |7591     |7601
CCGAGCCAGGAAATCCATGAGCCTGGACATGGGGCAACCTTCTCAGGCCAACACTAAGAA
 R  A  R  K  S  M  S  L  D  M  G  Q  P  S  Q  A  N  T  K  K
             |2521                       |2531

   |7611    .    .    .    .    .    .    .    .    .    .
GTTGCTTGgttagtttatctaaattatgtagatttttttattatttaaaaaaatagata
 L  L  G

  .    .    .    .    .    .    .    .    .    .    .    .
tttttactcttggaaaattatttgaaatttcaggattatcaaaattttccatgtcagtgt

  .    .    .    .    .    .    .    .
agcaaagtttttgatgccatttaaaagagagtttgata
```

Exon 52 | Start: 266484 | End: 266606 | Length: 122

```
.    .    .    .    .    .    .    .    .    .    .    .
aaagaaactgctccagggatgtattagagctttctttgagtcctcagtgaaagcttaaac

.    .    .    .    .    .    .    .    .    .    .    .
actttatgtccaaacattttctttttagtgtattcccatttatagacactgtagttaatg

.    .    .    .    .    .         |7621     |7631     |7641
aacttgcatattcttaacttttgtttatagGAACAAGGAAAAGTTTTGATCACTTGATAT
                               T  R  K  S  F  D  H  L  I  S
                                  |2541

     |7651     |7661     |7671     |7681     |7691     |7701
CAGACACAAAGGCTCCTAAAAGGCAAGAAATGGAATCAGGGATCACAACACCCCCCAAAA
  D  T  K  A  P  K  R  Q  E  M  E  S  G  I  T  T  P  P  K  M
     |2551                        |2561

     |7711     |7721     |7731       .    .    .    .    .
TGAGGAGAGTAGCAGAAACTGATTATGAAATGGgtgagaaacaaagtattgatctagatc
  R  R  V  A  E  T  D  Y  E  M  E
     |2571

  .    .    .    .    .    .    .    .    .    .    .    .
attgaaaataaggtgggagagtacatgaaagtcatgtttattttccagccatttcttaga

  .    .    .    .    .    .    .    .    .    .    .    .
atctttagagtgaaatatagaaacgtttgccatttctcaaaagataaactctaccattca

  .
aga
```

Exon 53 | Start: 266984 | End: 267114 | Length: 130
BE AWARE: This section overlaps with the following exon

```
.    .    .    .    .    .    .    .    .    .    .    .
tgtaggcgaatagtaattctctatgatgtttatgttagtattttaagtatctactaaaga

.    .    .    .    .    .    .    .    .    .    .    .
aagctgttgaattttagaagtaacattgaaatagttaggtgaagtgattatccaggtgtt

.    .    .    .    .    .         |7741     |7751     |7761
tgatcacgttaattccctatcttgctgcagAAACTCAGAGGATTTCCTCATCACAACAGC
```

```
                                T  Q  R  I  S  S  S  Q  Q  H
                                |2581

  |7771     |7781     |7791     |7801     |7811     |7821
ACCCACATTTACGTAAAGTTTCAGTGTCTGAATCAAATGTTCTCTTGGATGAAGAAGTAC
  P  H  L  R  K  V  S  V  S  E  S  N  V  L  L  D  E  E  V  L
  |2591                         |2601

  |7831     |7841     |7851     |7861        .     .     .
TTACTGATCCGAAGATCCAGGCGCTGCTTCTTACTGTTCTAgtaaggatttccccttttt
  T  D  P  K  I  Q  A  L  L  L  T  V  L
  |2611                         |2621

.    .    .    .    .    .    .    .    .    .    .    .
gagtcccccaccctcaaatttttattccagtctacttttaggaggcccttaaatattaaa

.    .    .    .    .    .    .    .    .    .    .    .
aacatgaataggatacagtcttctacttctcacccaaacagataacaattcagccacaaa

.    .    .
gtaaaaatgtt



Exon 54 | Start: 267293 | End: 267393 | Length: 100



.    .    .    .    .    .    .    .    .    .    .    .
accctcaaatttttattccagtctacttttaggaggcccttaaatattaaaaacatgaat

.    .    .    .    .    .    .    .    .    .    .    .
aggatacagtcttctacttctcacccaaacagataacaattcagccacaaagtaaaaatg

.    .    .    .    .    .     |7871     |7881     |7891
ttgtgtgtttacttttttgcatcttggcagGCTACACTGGTAAAATATACCACAGATGAG
                             A  T  L  V  K  Y  T  T  D  E
                                                  |2631

 |7901     |7911     |7921     |7931     |7941     |7951
TTTGATCAACGAATTCTTTATGAATACTTAGCAGAGGCCAGTGTTGTGTTTCCCAAAGTC
F  D  Q  R  I  L  Y  E  Y  L  A  E  A  S  V  V  F  P  K  V
                   |2641                         |2651

 |7961        .    .    .    .    .    .    .    .    .
TTTCCTGTTGTgtaagtatctccttttgattttaattcaccttcgtgcctgtctttaagt
```

```
F  P  V  V

.    .    .    .    .    .    .    .    .    .    .    .
taaatgcttacccagtaatgtgcactggttgcaaagagggcaaaatgagatattgtgata

.    .    .    .    .    .    .    .    .
gtgattttagctttgagacagtaggtttaatgagggttaag
```

Exon 55 | Start: 268504 | End: 268646 | Length: 142

```
.    .    .    .    .    .    .    .    .    .    .    .
aaatgaagaaatgccccagaaagtaaaaagcactcatctccctttaattttggcacatta

.    .    .    .    .    .    .    .    .    .    .    .
ttctggggaatgtatattatgttttccactacatattttcatttaattttcctctaaaat

.    .    .    .    .    .    |7971     |7981     |7991
gttcctctgttgactttttttttctttagGCATAATTTGTTGGACTCTAAGATCAACAC
                               H  N  L  L  D  S  K  I  N  T
                                        |2661

|8001     |8011     |8021     |8031     |8041     |8051
CCTGTTATCATTGTGCCAAGATCCAAATTTGTTAAATCCAATCCATGGAATTGTGCAGAG
 L  L  S  L  C  Q  D  P  N  L  L  N  P  I  H  G  I  V  Q  S
          |2671                          |2681

|8061     |8071     |8081     |8091     |8101     |8111  .
TGTGGTGTACCATGAAGAATCCCCACCACAATACCAAACATCTTACCTGCAAAgtaaata
 V  V  Y  H  E  E  S  P  P  Q  Y  Q  T  S  Y  L  Q  S
          |2691                          |2701

  .    .    .    .    .    .    .    .    .    .    .    .
aatgtatctggagaaggatggttgatgaacttgctaacatgcgcgctgttgtagaatgca

  .    .    .    .    .    .    .    .    .    .    .    .
ctgactacagaattctttataagggatagacttgttcatacttttatttccatattccat

  .    .    .    .    .
ttttttactctctcaactgtatg
```

```
Exon 56 | Start: 268993 | End: 269039 | Length: 46


.    .    .    .    .    .    .    .    .    .    .    .
taggttttagttgctttgacactcattctaaaaacatgttttcaacatgtacatagggtt

.    .    .    .    .    .    .    .    .    .    .    .
tatatatcatcagctatatgacttatttaatttctgttacaattaaaagataccttgctt

.    .    .    .    .    .           |8121     |8131     |8141
gttataagagtaaaatttgatttgttgcagGTTTTGGTTTTAATGGCTTGTGGCGGTTTG
                               F  G  F  N  G  L  W  R  F  A
                                                |2711

       |8151         .    .    .    .    .    .    .    .
CAGGACCGTTTTCAAAGgtaagaaaatatatttttctctaacttttggcaaaatgaaggt
  G  P  F  S  K


 .    .    .    .    .    .    .    .    .    .    .    .
ttctgttcaaattagtatgcctgctttaagaacacacaatgtgctgaaaaccagaaaaat

 .    .    .    .    .    .    .    .    .    .
aattcacaataaacacatatgttacttttataaaaagtttctcatca


Exon 57 | Start: 270511 | End: 270727 | Length: 216


.    .    .    .    .    .    .    .    .    .    .    .
aaatattactccactccccttttttaatgataagtaatacaaaggaagaaaaatagtaaa

.    .    .    .    .    .    .    .    .    .    .    .
ttaagtccaaacaaaattaatatttttggcttcagatggggatttacttaaaaaaaagga

.    .    .    .    .    .    |8161     |8171     |8181
actaaaataatttcctattttccattacagCAAACACAAATTCCAGACTATGCTGAGCTT
                              Q  T  Q  I  P  D  Y  A  E  L
                              |2721

|8191     |8201     |8211     |8221     |8231     |8241
ATTGTTAAGTTTCTTGATGCCTTGATTGACACGTACCTGCCTGGAATTGATGAAGAAACC
```

```
I  V  K  F  L  D  A  L  I  D  T  Y  L  P  G  I  D  E  E  T
|2731                        |2741

|8251     |8261     |8271     |8281     |8291     |8301
AGTGAAGAATCCCTCCTGACTCCCACATCTCCTTACCCTCCTGCACTGCAGAGCCAGCTT
S  E  E  S  L  L  T  P  T  S  P  Y  P  P  A  L  Q  S  Q  L
|2751                        |2761

|8311     |8321     |8331     |8341     |8351     |8361
AGTATCACTGCCAACCTTAACCTTTCTAATTCCATGACCTCACTTGCAACTTCCCAGCAT
S  I  T  A  N  L  N  L  S  N  S  M  T  S  L  A  T  S  Q  H
|2771                        |2781

|8371     .    .    .    .    .    .    .    .    .
TCCCCAGgtcagtaaatgtgatctttatatgactttgagcaacaatataagacaccaaca
S  P  G
|2791

 .    .    .    .    .    .    .    .    .    .    .
ttaggaattcccttgtgatcagtttatagcaaattttgctccttttttcttatgagattca

 .    .    .    .    .    .    .    .
ccttacatttcttctttaccttgtaactgacttgact
```

Exon 58 | Start: 284037 | End: 287701 | Length: 3664

```
.    .    .    .    .    .    .    .    .    .    .    .
tgtaagtacactccacaatatttgcacagacaaaatcgcctaatgattgtttcctagaat

.    .    .    .    .    .    .    .    .    .    .    .
gtgtccccgttgttaagcgacacatgactgcaatgaaattcagtcctggaaggaaaagaa

.    .    .    .    .    .        |8381     |8391     |8401
gaagtaactggctgttctctttttctccagGAATCGACAAGGAGAACGTTGAACTCTCCC
                               I  D  K  E  N  V  E  L  S  P
                                                  |2801

   |8411     |8421     |8431     |8441     |8451     |8461
CTACCACTGGCCACTGTAACAGTGGACGAACTCGCCACGGATCCGCAAGCCAAGTGCAGA
  T  T  G  H  C  N  S  G  R  T  R  H  G  S  A  S  Q  V  Q  K
                     |2811                        |2821
```

```
   |8471      |8481      |8491      |8501      |8511      |+1
AGCAAAGAAGCGCTGGCAGTTTCAAACGTAATAGCATTAAGAAGATCGTGTGAAGCTTGC
  Q  R  S  A  G  S  F  K  R  N  S  I  K  K  I  V  *
                       |2831                          |2841

   |+11       |+21       |+31       |+41       |+51       |+61
TTGCTTTCTTTTTTAAAATCAACTTAACATGGGCTCTTCACTAGTGACCCCTTCCCTGTC

   |+71       |+81       |+91       |+101      |+111      |+121
CTTGCCCTTTCCCCCCATGTTGTAATGCTGCACTTCCTGTTTTATAATGAACCCATCCGG

   |+131      |+141      |+151      |+161      |+171      |+181
TTTGCCATGTTGCCAGATGATCAACTCTTCGAAGCCTTGCCTAAATTTAATGCTGCCTTT

   |+191      |+201      |+211      |+221      |+231      |+241
TCTTTAACTTTTTTTCTTCTACTTTTGGCGTGTATCTGGTATATGTAAGTGTTCAGAACA

   |+251      |+261      |+271      |+281      |+291      |+301
ACTGCAAAGAAAGTGGGAGGTCAGGAAACTTTTAACTGAGAAATCTCAATTGTAAGAGAG

   |+311      |+321      |+331      |+341      |+351      |+361
GATGAATTCTTGAATACTGCTACTACTGGCCAGTGATGAAAGCCATTTGCACAGAGCTCT

   |+371      |+381      |+391      |+401      |+411      |+421
GCCTTCTGTGGTTTTCCCTTCTTCATCCTACAGAGTAAAGTGTTAGTCCTATTTATACAT

   |+431      |+441      |+451      |+461      |+471      |+481
TTTTCAAGATACAAGTTTATGAGAGAAATAGTATTATAACCCCAGTATGTTTAATCTTTT

   |+491      |+501      |+511      |+521      |+531      |+541
AGCTGTGGACTTTTTTTTTAACCGTACAAAACTGAAAGAACCATAGAGGTCAAGCCTCAG

   |+551      |+561      |+571      |+581      |+591      |+601
TGACTTGACACCATAAAGCCACAGACAAGGTACTTGGGGGGGAGGGCAGGGAAATTTCAT

   |+611      |+621      |+631      |+641      |+651      |+661
ATTTTATAGTGGATTCTTAAGAAATACTAACACTTGAGTATTAGCAATAATTACAGGAAA

   |+671      |+681      |+691      |+701      |+711      |+721
ATAAGTGCGACCACATATATCTTAACATTACTGAATTAAAACTATGGCTTCTAAGTCCTT

   |+731      |+741      |+751      |+761      |+771      |+781
ATCCAAACTCAGTCATCCAAACTAGTTTATTTTTTTCTCCAGTTGATTATCTTTTAATTT

   |+791      |+801      |+811      |+821      |+831      |+841
TTAATTTTGCTAAAGGTGGTTTTTTTGTGTTTTGTTTTTTGTAAACCAAAACTATACTAA
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   |+851      |+861      |+871      |+881      |+891      |+901
GTATAGTAATTATATATATATATATATTTTTTCCCCTCCCCCTCTTCTTTCCTAACTAAT

   |+911      |+921      |+931      |+941      |+951      |+961
TCTGAGCAGGGTAATCAGTGAACAAAGTGTTGAAAATTGTTCCCAGAAGGTAATTTTCAT

   |+971      |+981      |+991      |+1001     |+1011     |+1021
AGATGTTTGCATTAGCTCCATAGCAAAATGGAATGGTACGTGACATTTAGGGTAGCTGAT

   |+1031     |+1041     |+1051     |+1061     |+1071     |+1081
ATTTTTATTTTGTTAAATAATTTCCAAGAATAGAGTATGGTGTATATTATAAATTTCTTT

   |+1091     |+1101     |+1111     |+1121     |+1131     |+1141
GATAAGATGTATTTTGAATGTCTTTTAATCTTCCTCCTCCTCTCCAAAAAAATCAGAAAC

   |+1151     |+1161     |+1171     |+1181     |+1191     |+1201
CTCTTTAAGAAAACATGTAGGTTATATATGCTAGAATTGCATTTAATCACTGTGAAAAGA

   |+1211     |+1221     |+1231     |+1241     |+1251     |+1261
CTGGTCAGCCTGCATTAGTATGACAGTAGGGGGGCTGTTAGAATTGCTGCTATACTGGTG

   |+1271     |+1281     |+1291     |+1301     |+1311     |+1321
GTATGGATTATCATGGCATTGGAATTTTCATAGTAATGCAGATCCAATTTCTTTGTGGTA

   |+1331     |+1341     |+1351     |+1361     |+1371     |+1381
CCTGCAGTTTACAAAATAATTTGACTTCAGTGAGCATATTGGTATCTGGATGTTCCAATT

   |+1391     |+1401     |+1411     |+1421     |+1431     |+1441
TAGAACTAAACCATATTTATTACAAAAAGATATTAATCCCTCTACTCCCAGGTTCCCTTT

   |+1451     |+1461     |+1471     |+1481     |+1491     |+1501
ATATGTTAAGATATAATGGCTTTGAGGGGGGAAAAAATAAACCTAGGGGAGAGGGGAGTT

   |+1511     |+1521     |+1531     |+1541     |+1551     |+1561
TCCTGTAGTGCTGTTTCATTAGAGGATTTCAGTAAATTAAATTCCACAGCTAATTCAATA

   |+1571     |+1581     |+1591     |+1601     |+1611     |+1621
AATAATGGTACATTTAAGTGTTCTGATTTTAATAATATATTTCACATTTATCCACACAGT

   |+1631     |+1641     |+1651     |+1661     |+1671     |+1681
AACAATGTAATATGTTAATGTAAATAAAATTGGTTTTGATACTCAGAAATAACAAGAATT

   |+1691     |+1701     |+1711     |+1721     |+1731     |+1741
TAATTTTTTAAATTTGTTTACAGTCCTGGGAAAAGTAAGAATTATTTGCCAAAATAAGAG
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```
   |+1751     |+1761     |+1771     |+1781     |+1791     |+1801
GAAAGAAAACCTTAGTATTATTAATGAGTTTACCATAGAATTGTTGGAAATACTGAAGAC

   |+1811     |+1821     |+1831     |+1841     |+1851     |+1861
AGGTGCAATTTACTAAACTTTTGTTTTTAAACTATTGTAGAGGCTGCATTAGAAGAAAAT

   |+1871     |+1881     |+1891     |+1901     |+1911     |+1921
GTTTATAATGACAGAGCAACTATGACTATATAAAAAAGCTGAAATTAGAACTGTGTTTAG

   |+1931     |+1941     |+1951     |+1961     |+1971     |+1981
AAATAGATCAGTAACCCAGTGCCAAGGATGCCAAGCTGCCACCATGGTCTTGGCTCTCCC

   |+1991     |+2001     |+2011     |+2021     |+2031     |+2041
ACAACCCAGTGTTTCTGGGGTAAGTTTCACAGTTTCTAGGCCCTGGAATAGCAGGCAGTG

   |+2051     |+2061     |+2071     |+2081     |+2091     |+2101
TAAGCCTTTGATAACTTTAGTTCGATGTTTTTCTTGTTTTTGTTTGTTGGTTTGGTGCAT

   |+2111     |+2121     |+2131     |+2141     |+2151     |+2161
ATGATAGTGGGTGTTATGCTATTTTGCTCTTCCCATCAAAATAAAGAAACTTCCAGAGGT

   |+2171     |+2181     |+2191     |+2201     |+2211     |+2221
TTACTGTTAAAAATACTGATATTTCCATAAACGGGTTTACCAAGGGTGTAGTATTTCATA

   |+2231     |+2241     |+2251     |+2261     |+2271     |+2281
CCGCCTGAAATGATCAGCATTGGCACAAATCAAAATTCAGCCGCCTTTGAAATGCAAAAA

   |+2291     |+2301     |+2311     |+2321     |+2331     |+2341
TACCTTTGACTAGTAAGTACATCCTAGGAGTTTGAAAACTTAACTAAGGTTTAAAATTTA

   |+2351     |+2361     |+2371     |+2381     |+2391     |+2401
CCTTGTTTAAAGAACTTCTGACTTTTGAGGAAAATCTAGCTTTCCAAGTAACTAAAATGT

   |+2411     |+2421     |+2431     |+2441     |+2451     |+2461
ACATGAGATAAACCTCTCACCACTATGTGTCCCTTGAGAAATGCAACACTTTTTTAGTCT

   |+2471     |+2481     |+2491     |+2501     |+2511     |+2521
TCATACTTGTAATCTATAAAAGAAATTCTGAAGTTTAGACCAAGTTGCCCATTTCTGCGT

   |+2531     |+2541     |+2551     |+2561     |+2571     |+2581
AATTGACATAAGTTCTGTTAAAAATATTATAAGTAATTCGTTTCGGTTTGTAGATGTTTC

   |+2591     |+2601     |+2611     |+2621     |+2631     |+2641
CCCTGACTTGTTAAAGAGGAAACCAGGAACTCAGTCATGTTTTTGTCCTGGATAATCTAC

   |+2651     |+2661     |+2671     |+2681     |+2691     |+2701
```

```
CTGTTATGCCAGTACTCCCATCCGAGGGGCATGCCCTTAGTTGCCCAGATGGAGATGCAG

   |+2711     |+2721     |+2731     |+2741     |+2751     |+2761
TTCAGTAGATTTGGGGCAAAGTGGCTACAGCTCTGTCTTCCATTCACTCAACACCTGTTC

   |+2771     |+2781     |+2791     |+2801     |+2811     |+2821
ATGACTGAGCCAGGTGCCCAGGACACATCCTAAACAGTCAGCTTCTATCCTGTGTCCTAG

   |+2831     |+2841     |+2851     |+2861     |+2871     |+2881
TTGGGGAGACAGAGTGCCAGCCAGCAACCCTCCCAGGTTTGTAGGTTTTAGGGGTTTTCA

   |+2891     |+2901     |+2911     |+2921     |+2931     |+2941
GTTTTGTTTGGGTTTTTTGTTTTTTGTTTTTGTTTCTACATCCTTCCCCGACTCCCAGGC

   |+2951     |+2961     |+2971     |+2981     |+2991     |+3001
ATAATGAGGCATGTCTTACTCAATGTTATGCAATGGATTTAGGCAAAAATTCATTCTTAG

   |+3011     |+3021     |+3031     |+3041     |+3051     |+3061
TGTCAGCCACACAATTTTTTTTAATGCAGTATATTCACCTGTAAATAGTTTGTGTAAAAT

   |+3071     |+3081     |+3091     |+3101     |+3111     |+3121
TTGACAAAAAAAAGTATATTTACTATACTGTAAATATATGTGATGATATATTGTATTATTT

   |+3131     |+3141     |+3151     |+3161     |+3171     |+3181
TGCTTTTTTGTAAAGCAGTTAGTTGCTGCACATGGATAACAACAAAAATTTGATTATTCT

   |+3191     |+3201     |+3211     |+3221     |+3231     |+3241
CGTGTTAGTATTGTTAACTTCTTTTTGCGACTGCGTTACATCATTTAAAGAAAATGCTGT

   |+3251     |+3261     |+3271     |+3281     |+3291     |+3301
GTATTGTAAACTTAAATTGTATATGATAACTTACTGTCCTTTCCATCCGGGCCTAAACTT

   |+3311     |+3321     |+3331     |+3341     |+3351     |+3361
TGGCAGTTCCTTTGTCTACAACCTTGTTAATACTGTAAACAGTTGTACGCCAGCAGGAAA

   |+3371     |+3381     |+3391     |+3401     |+3411     |+3421
AATACTGCCCAACAGACAAAATCGATCATTGTAGGGGAAAATCATAGAAATCCATTTCAG

   |+3431     |+3441     |+3451     |+3461     |+3471     |+3481
ATCTTTATTGTTCCTCACCCCATTTTCCTCCTTGTGTATGTACTTCCCCCACCCCCCTTT

   |+3491     |+3501     |+3511     |+3521.    .    .    .    .
TTTTAAGTAAAATGTAAATTCAATCTGCTCTAAGAtatgaggagttatttaatttcttca

    .    .    .    .    .    .    .    .    .    .    .    .
gatgtatcgagctctgttttcttccccccgagtcctcccaatcttttgaaacattaaggc
```

```
    .    .    .    .    .    .    .    .    .    .    .    .
cattttccttaaggatgtttttggctctcctactccccgtgagaaagatctttccatttc

    .
cagaa


LRG Parser: Version: 0.2, Version Date: 11/02/2015
Reader: Version: 0.2, Version Date: 11/02/2015
Writer: Version: 0.2, Version Date: 11/02/2015
Control: Version: 0.2, Version Date: 11/02/2015
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