Gene: ASL - Sequence: NG_009288.1
Date : January 15, 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: 5000 | End: 5068 | Length: 68



.    .    .    .    .    .    .    .    .    .    .    .
gggcctgatgtcatagcctctacccctggcccgagtctccagtcccctgcgtgtctgctg

.    .    .    .    .    .    .    .    .    .    .    .
accacagcacgaacgccagcgcactaccctcctcaaccccagcccaggccccttccccgt

.    .    .    .    .    .    .    .    .    .    .    .
cggggtccccccaaccctttccccgcccgcttccccgccccggggccgcttagcctccag

.    .    .    .    .    .    .    .    .    .    .    .
ctcagcgggaggtatccccgcccacggccaggattggaggatggaggcaacgcccacccc

.    .    .    .    .    .    .    .    .    .    .    .
gccgggcggcctcctattggcgcggccgtcgccaggggtggggacaggaccggcggctgc

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

 |-49       .    .    .    .    .    .    .    .    .    .
AGGCGGAGgtgagtgcgcggcggccggatgggcgggacgggcgtggaggacgccgagcac

  .    .    .    .    .    .    .    .    .    .    .    .
cgtggcgcgcgctcacgtccgcgtccccaagggctgcgctccctcaagcgcagtgcccag

  .    .    .    .    .    .    .    .    .    .    .    .
aactcggagccagcccggcccgggggaccctgctggccaaggaggtcgtcagtccggtct

  .    .    .    .    .    .    .    .    .    .    .    .
tgtcttccagacccggaggaccgaagcttccggacgacgaggaaccgcccaacatggcct

  .    .    .    .    .    .    .    .    .    .    .    .
cggaggtgagtgggacctcggggactccggtcctcctagcctccaaaggagagagtgggg
```

```
   .    .
gcgccagac
```

Exon 2 | Start: 5250 | End: 5305 | Length: 55

```
.    .    .    .    .    .    .    .    .    .    .    .
ctcctattggcgcggccgtcgccaggggtggggacaggaccggcggctgctgacgccatc

.    .    .    .    .    .    .    .    .    .    .    .
ccggccagaaaagccctggccagtggcgggcgcgacactatccgtgcggccaggcggagg

.    .    .    .    .    .    .    .    .    .    .    .
tgagtgcgcggcggccggatgggcgggacgggcgtggaggacgccgagcaccgtggcgcg

.    .    .    .    .    .    .    .    .    .    .    .
cgctcacgtccgcgtccccaagggctgcgctccctcaagcgcagtgcccagaactcggag

.    .    .    .    .    .    .    .    .    .    .    .
ccagcccggcccgggggaccctgctggccaaggaggtcgtcagtccggtcttgtcttcca

   |-39      |-29      |-19      |-9       |1        |11   .
ACCCGGAGGACCGAAGCTTCCGGACGACGAGGAACCGCCCAACATGGCCTCGGAGgtgag
                                           M  A  S  E
                                           |1

    .    .    .    .    .    .    .    .    .    .    .    .
tgggacctcggggactccggtcctcctagcctccaaaggagagagtgggggcgccagacc

    .    .    .    .    .    .    .    .    .    .    .    .
tgcctcgggccaccctgctgggaatcgccctccaggaagcaattttgaaaattacctagg

    .    .    .    .    .    .    .    .    .    .    .    .
aagcctgcacccccagccctcccgggcgcatcatctggagcccagcagtcacctttacca

    .    .    .    .    .    .    .    .    .    .    .    .
ggactcaccagtatccgcaggcagcccttgtggcaaacccaccaacccacactactaggg

    .    .    .    .    .    .    .    .    .    .    .
gtagagtggctctgccctcacctcacagtgatgcctgcctggccaggaaaagtggc
```

Exon 3 | Start: 11014 | End: 11209 | Length: 195

```
.    .    .    .    .    .    .    .    .    .    .    .
cctgggaggcagagtttgcagtgagctgagatggcaccactgtactccagcctggccgac

.    .    .    .    .    .    .    .    .    .    .    .
aaagtgagactctgtctcaaaaaaaaaaaaaaagaacccaaacttttggtgttcagccat

.    .    .    .    .    .    .    .    .    .    .    .
gttcccatgctcactcccagggtggtgactctgggaaggtctcagcctccttgtctgccc

.    .    .    .    .    .    .    .    .    .    .    .
agttagaatgatctgatgcccctgctaccatcagacttgataagtttcccaaagactctt

.    .    .    .    .    .    .    .    .    .    .    .
tgcaagaagcactgttctggagggtggaggagagactaattgttcttgctctcctggcca

        |21       |31       |41       |51       |61       |71
AGTGGGAAGCTTTGGGGTGGCCGGTTTGTGGGTGCAGTGGACCCCATCATGGAGAAGTTC
S  G  K  L  W  G  G  R  F  V  G  A  V  D  P  I  M  E  K  F
                  |11                           |21

        |81       |91       |101      |111      |121      |131
AACGCGTCCATTGCCTACGACCGGCACCTTTGGGAGGTGGATGTTCAAGGCAGCAAAGCC
N  A  S  I  A  Y  D  R  H  L  W  E  V  D  V  Q  G  S  K  A
                  |31                           |41

        |141      |151      |161      |171      |181      |191
TACAGCAGGGGCCTGGAGAAGGCAGGGCTCCTCACCAAGGCCGAGATGGACCAGATACTC
Y  S  R  G  L  E  K  A  G  L  L  T  K  A  E  M  D  Q  I  L
                  |51                           |61

        |201      .    .    .    .    .    .    .    .    .
CATGGCCTAGACAAGgtacttgccgtggcccaagccccacccaaggccccttccctgtgg
H  G  L  D  K


    .    .    .    .    .    .    .    .    .    .    .    .
ccccaggctcccaccaaatccctgagcaaacagtgcagtgttgcccatctgtggtttcac

    .    .    .    .    .    .    .    .    .    .    .    .
attgaactaattatatactcaagtgctgtttaactgtgtgccttgatgactgcctctctc
```

```
    .    .    .    .    .    .    .    .    .    .    .    .
catcctttaatgacccctgtggcccacatggctcatgggtaaaggtgtgctgggcctgag

    .    .    .    .    .    .    .    .    .    .    .    .
atgccccctcccagggtgcgcttccaggactcagctcctgggcagggacagtcagtcacc

    .    .    .
agggatagggtgggac
```

Exon 4 | Start: 11579 | End: 11663 | Length: 84

```
.    .    .    .    .    .    .    .    .    .    .    .
agcaaacagtgcagtgttgcccatctgtggtttcacattgaactaattatatactcaagt

.    .    .    .    .    .    .    .    .    .    .    .
gctgtttaactgtgtgccttgatgactgcctctctccatcctttaatgacccctgtggcc

.    .    .    .    .    .    .    .    .    .    .    .
cacatggctcatgggtaaaggtgtgctgggcctgagatgccccctcccagggtgcgcttc

.    .    .    .    .    .    .    .    .    .    .    .
caggactcagctcctgggcagggacagtcagtcaccagggatagggtgggaccaaggcag

.    .    .    .    .    .    .    .    .    .    .    .
gggctctcttggctgctgatgcctgctcacctgaccccggcattgctgctacccactaca

   |211      |221      |231      |241      |251      |261
GTGGCTGAGGAGTGGGCCCAGGGCACCTTCAAACTGAACTCCAATGATGAGGACATCCAC
V  A  E  E  W  A  Q  G  T  F  K  L  N  S  N  D  E  D  I  H
   |71                          |81

   |271      |281      |291 .    .    .    .    .    .    .
ACAGCCAATGAGCGCCGCCTGAAGgtacgacccctggagccccaccgctttccttgcctc
T  A  N  E  R  R  L  K
   |91

   .    .    .    .    .    .    .    .    .    .    .    .
ccctctccaccttgcccagggccactttgagcattagcaccattctgtttacttcgccat

   .    .    .    .    .    .    .    .    .    .    .    .
tggcagacagcatgtgagacctcaggacatgagccaggcaccctggctcatgcctataat
```

```
   .    .    .    .    .    .    .    .    .    .    .    .
cctagcactttgggaggctgaggtgggaggattgcttgagaccaggagttcgagaccagc

   .    .    .    .    .    .    .    .    .    .    .    .
ctgggcaacataatgaggtcccacagctacaaaaattaaaaaaagaaaagaaaaaaagaa

   .    .    .    .    .
caggcctcagcagaaatggcgagag
```

Exon 5 | Start: 12091 | End: 12148 | Length: 57

```
.    .    .    .    .    .    .    .    .    .    .    .
agccaggcaccctggctcatgcctataatcctagcactttgggaggctgaggtgggagga

.    .    .    .    .    .    .    .    .    .    .    .
ttgcttgagaccaggagttcgagaccagcctgggcaacataatgaggtcccacagctaca

.    .    .    .    .    .    .    .    .    .    .    .
aaaattaaaaaaagaaaagaaaaaaagaacaggcctcagcagaaatggcgagagatttgg

.    .    .    .    .    .    .    .    .    .    .    .
ggaggacccggagccctggggtatggaggtaggttggcagggctgatgaggaaaactgcc

.    .    .    .    .    .    .    .    .    .    .    .
ctgcctgggttgactcctctgggggtatagaccgtgaccctgggtctcccttcacctcca

         |301      |311      |321      |331      |341
GAGCTCATTGGTGCAACGGCAGGGAAGCTGCACACGGGACGGAGCCGGAATGACCAGgtg
E  L  I  G  A  T  A  G  K  L  H  T  G  R  S  R  N  D  Q
         |101                         |111

 .    .    .    .    .    .    .    .    .    .    .    .
ctttagcccctccacccccctgctccgtgttgtcccaaccttgaggagcccaggggggcagt

 .    .    .    .    .    .    .    .    .    .    .    .
tagagttctgcagcggtcctggctcctcagggaagcaacacatcggcctccctgagcacc

 .    .    .    .    .    .    .    .    .    .    .    .
atctcctccttgcacaggtggtcacagacctcaggctgtggatgcggcagacctgctcca

 .    .    .    .    .    .    .    .    .    .    .    .
cgctctcgggcctcctctgggagctcattaggaccatggtggatcgggcagaggcgtgag
```

```
 .    .    .    .    .    .    .    .    .    .    .    .
tcctacagggacacccaggggcagacagaggtgtgatggaagcctgaacaggagacc
```

Exon 6 | Start: 12288 | End: 12386 | Length: 98

```
.    .    .    .    .    .    .    .    .    .    .    .
ggggtatggaggtaggttggcagggctgatgaggaaaactgccctgcctgggttgactcc

.    .    .    .    .    .    .    .    .    .    .    .
tctgggggtatagaccgtgaccctgggtctcccttcacctccaggagctcattggtgcaa

.    .    .    .    .    .    .    .    .    .    .    .
cggcagggaagctgcacacgggacggagccggaatgaccaggtgctttagcccctccacc

.    .    .    .    .    .    .    .    .    .    .    .
ccctgctccgtgttgtcccaaccttgaggagcccaggggcagttagagttctgcagcgg

.    .    .    .    .    .    .    .    .    .    .    .
tcctggctcctcagggaagcaacacatcggcctccctgagcaccatctcctccttgcaca

  |351      |361      |371      |381      |391      |401
GTGGTCACAGACCTCAGGCTGTGGATGCGGCAGACCTGCTCCACGCTCTCGGGCCTCCTC
V  V  T  D  L  R  L  W  M  R  Q  T  C  S  T  L  S  G  L  L
            |121                          |131

  |411      |421      |431      |441      .    .    .    .
TGGGAGCTCATTAGGACCATGGTGGATCGGGCAGAGGCgtgagtcctacagggacaccca
W  E  L  I  R  T  M  V  D  R  A  E  A
            |141

  .    .    .    .    .    .    .    .    .    .    .    .
gggggcagacagaggtgtgatggaagcctgaacaggagacctagggggcaggggtgaaca

  .    .    .    .    .    .    .    .    .    .    .    .
gcgtgggggtgccaggccctgggggacaggggcatcccagaactccaggatcgaggcaga

  .    .    .    .    .    .    .    .    .    .    .    .
gcagccaggagtgggccatttcctgcaggccccaatactcccatgccagtctagctcagc

  .    .    .    .    .    .    .    .    .    .    .    .
aggcagagaagactaacccttcgtggggctgggtgcggtggctcacgcctgtaatctcag
```

```
  .    .    .    .    .    .    .    .
cactttgggaggccgaggtgggtggatcacctgaggtca
```

Exon 7 | Start: 15796 | End: 15874 | Length: 78

```
.    .    .    .    .    .    .    .    .    .    .    .
ctattctggcccctgctcggagatgctgagtgacagaggctggacttggggtgtttctgg

.    .    .    .    .    .    .    .    .    .    .    .
caaagcctcactgcaggaagccccacagctcaggcccagtccttggttcacacggtccca

.    .    .    .    .    .    .    .    .    .    .    .
cttccagcttcttttgcccttaagactgatttgtccctgggagatcaccagatccctcat

.    .    .    .    .    .    .    .    .    .    .    .
tcaggtggagtgctgcagcgtgacacttttccaggggtgacccaggcctgcagggttcc

.    .    .    .    .    .    .    .    .    .    .    .
agtgtcacaggcaggccttgcatgagcctccacccgagcttctgctcctcctctcccaca

    |451      |461      |471      |481      |491      |501
GGAACGTGATGTTCTCTTCCCGGGGTACACCCATTTGCAGAGGGCCCAGCCCATCCGCTG
 E  R  D  V  L  F  P  G  Y  T  H  L  Q  R  A  Q  P  I  R  W
    |151                         |161

    |511      |521    .    .    .    .    .    .    .    .
GAGCCACTGGATTCTGAGgtgagccaggtgaggtgcaggggctgtgctagaggggaggac
 S  H  W  I  L  S
    |171

  .    .    .    .    .    .    .    .    .    .    .    .
cccggctgccctgaccctcctgcccctggcttcccacagccacgccgtggcactgacccg

  .    .    .    .    .    .    .    .    .    .    .    .
agactctgagcggctgctggaggtgcggaagcggatcaatgtcctgcccctggggaggtg

  .    .    .    .    .    .    .    .    .    .    .    .
ggtgaggctccagtgccccgagggcctggtgggggtggctgctgcatagccttagggatt

  .    .    .    .    .    .    .    .    .    .    .    .
gacagagctgggaagtgcagagtgggacagaaaaccgccttatctgctcagcgggggact
```

```
  .    .    .    .
ctgcatggagccccagctc
```

Exon 8 | Start: 15955 | End: 16033 | Length: 78

```
.    .    .    .    .    .    .    .    .    .    .    .
ggagatcaccagatccctcattcaggtggagtgctgcagcgtgacacttttccaggggt

.    .    .    .    .    .    .    .    .    .    .    .
gacccaggcctgcagggttccagtgtcacaggcaggccttgcatgagcctccacccgagc

.    .    .    .    .    .    .    .    .    .    .    .
ttctgctcctcctctcccacagggaacgtgatgttctcttcccggggtacacccatttgc

.    .    .    .    .    .    .    .    .    .    .    .
agagggcccagcccatccgctggagccactggattctgaggtgagccaggtgaggtgcag

.    .    .    .    .    .    .    .    .    .    .    .
gggctgtgctagaggggaggaccccggctgccctgaccctcctgcccctggcttcccaca

      |531      |541      |551      |561      |571      |581
CCACGCCGTGGCACTGACCCGAGACTCTGAGCGGCTGCTGGAGGTGCGGAAGCGGATCAA
 H   A   V   A   L   T   R   D   S   E   R   L   L   E   V   R   K   R   I   N
                |181                          |191

      |591      |601  .    .    .    .    .    .    .    .
TGTCCTGCCCCTGGGGAGgtgggtgaggctccagtgccccgagggcctggtgggggtggc
 V   L   P   L   G   S
                |201

  .    .    .    .    .    .    .    .    .    .    .    .
tgctgcatagccttagggattgacagagctgggaagtgcagagtgggacagaaaaccgcc

  .    .    .    .    .    .    .    .    .    .    .    .
ttatctgctcagcgggggactctgcatggagccccagctctcgctaaggtgacgaccaag

  .    .    .    .    .    .    .    .    .    .    .    .
ccattgaatgtgtctgagcagggccagagccctccagcaaggctcctggcaagcccagcc

  .    .    .    .    .    .    .    .    .    .    .    .
tgctgccctcagcctgacatgtgggaacatgtgtcaggagacaagtgtcctgcacccagg
```

```
  .    .    .    .
gtgacttagtgcttgggga
```

Exon 9 | Start: 16545 | End: 16598 | Length: 53

```
.    .    .    .    .    .    .    .    .    .    .    .
caagcccagcctgctgccctcagcctgacatgtgggaacatgtgtcaggagacaagtgtc

.    .    .    .    .    .    .    .    .    .    .    .
ctgcacccagggtgacttagtgcttggggacaagtgttttgtggacacttggggacaagt

.    .    .    .    .    .    .    .    .    .    .    .
attctgtacccaaggagactgggccagggaagaggctaagcgccaggtggttgccctggc

.    .    .    .    .    .    .    .    .    .    .    .
aaccaggacttggttctctgtgtgtgcgttcgtgtgtgtgtgtgtgtgtgtgtgtgtg

.    .    .    .    .    .    .    .    .    .    .    .
tgtgtgtgtgtcagggctgcctgccaggagccctggtcaccatgaatccctgtccctgca

        |611      |621      |631      |641      |651     .
TGGGGCCATTGCAGGCAATCCCCTGGGTGTGGACCGAGAGCTGCTCCGAGCAGgtgagac
 G   A   I   A   G   N   P   L   G   V   D   R   E   L   L   R   A   E
                            |211

  .    .    .    .    .    .    .    .    .    .    .    .
gtcctgcccctcctccccagggagaatcaccctcagcacccgccaagacctgcagacaca

  .    .    .    .    .    .    .    .    .    .    .    .
cctgaaaccagagggcaggggcctgtggctcctggtgaaaccttcattcattgcctatgg

  .    .    .    .    .    .    .    .    .    .    .    .
gcactgaggtcatcaagttcaggggtcactcatggcagggatgcctggtactgagagact

  .    .    .    .    .    .    .    .    .    .    .    .
cagggctcctgcctccctcctgggactgtgcaaaagatccctccccccagctgttgcccc

  .    .    .    .    .    .    .    .    .    .    .
accctgatcaggggaggggctgggcaacctagttgggggagaggggccactc
```

Exon 10 | Start: 16940 | End: 17003 | Length: 63

```
.    .    .    .    .    .    .    .    .    .    .    .
agcacccgccaagacctgcagacacacctgaaaccagagggcaggggcctgtggctcctg

.    .    .    .    .    .    .    .    .    .    .    .
gtgaaaccttcattcattgcctatgggcactgaggtcatcaagttcaggggtcactcatg

.    .    .    .    .    .    .    .    .    .    .    .
gcagggatgcctggtactgagagactcagggctcctgcctccctcctgggactgtgcaaa

.    .    .    .    .    .    .    .    .    .    .    .
agatccctcccccccagctgttgccccaccctgatcaggggaggggctgggcaacctagt

.    .    .    .    .    .    .    .    .    .    .    .
tgggggagaggggccactccctgtcctccagcttagccctgcttcctcccacccccca

     |661      |671      |681      |691      |701      |711
AACTCAACTTTGGGGCCATCACTCTCAACAGCATGGATGCCACTAGTGAGCGGGACTTTG
  L  N  F  G  A  I  T  L  N  S  M  D  A  T  S  E  R  D  F  V
     |221                         |231

       .    .    .    .    .    .    .    .    .    .    .
TGGgtgagtcctggggagccagtcccctgccctgtgcctcactttagtccttcagcccag
  A


  .    .    .    .    .    .    .    .    .    .    .    .
cttctctccagtttcctcccacacctccacggacaggctggttgtggtgatattgtacac

  .    .    .    .    .    .    .    .    .    .    .    .
tgaagtataaaccttaaatgggtaaagtgggtggggcatggtggttcaccatgcccagca

  .    .    .    .    .    .    .    .    .    .    .    .
ctggccaacatggtgaaaccccatctctactaagaatacaaaatttagctgggtgtgtgg

  .    .    .    .    .    .    .    .    .    .    .    .
tggcaggtgcctgtaatcccagctactcaggagttctgaggccagagaatcacttgaacc

  .
cagg
```

Exon 11 | Start: 18018 | End: 18133 | Length: 115

```
.    .    .    .    .    .    .    .    .    .    .    .
gataaattgtatgtgagtgataactcagtaaagctggtttatttaaaacaacaacaataa

.    .    .    .    .    .    .    .    .    .    .    .
caaaaaacacgctaggtgcaatggcttacgtttgtaatcctagcactttgggaggccaaa

.    .    .    .    .    .    .    .    .    .    .    .
gcagaaggattgcttgagcccacaagtttcagaacagcttgggcgacatagcacgacccc

.    .    .    .    .    .    .    .    .    .    .    .
atctttgcgaaaaatgaaaatttagccgggtccccccaccgcctaacctcctcctgcccc

.    .    .    .    .    .    .    .    .    .    .    .
ctgtatggtcaggctgggtggggatgggagaggcctggtgactgggaacctttctccca

  |721      |731      |741      |751      |761      |771
CCGAGTTCCTGTTCTGGGCTTCGCTGTGCATGACCCATCTCAGCAGGATGGCCGAGGACC
  E  F  L  F  W  A  S  L  C  M  T  H  L  S  R  M  A  E  D  L
  |241                        |251

  |781      |791      |801      |811      |821      |831    .
TCATCCTCTACTGCACCAAGGAATTCAGCTTCGTGCAGCTCTCAGATGCCTACAGgtaag
  I  L  Y  C  T  K  E  F  S  F  V  Q  L  S  D  A  Y  S
  |261                        |271

    .    .    .    .    .    .    .    .    .    .    .    .
ccctgaactgccacctccatctgccgctgccggcctctgtatcccccgccgcccgcggac

    .    .    .    .    .    .    .    .    .    .    .    .
gtggctgccttcctccccgtcccacccctccgccagacctggccattgcggcgctggacc

    .    .    .    .    .    .    .    .    .    .    .    .
agccaagggtccagccccttcagcgccagcacctctgtccccagcacgggaagcagcctg

    .    .    .    .    .    .    .    .    .    .    .    .
atgccccagaagaaaaaccccgacagtttggagctgatccggagcaaggctgggcgtgtg

    .    .    .    .    .    .    .    .    .    .    .
tttgggcgggtgagcaaggcaggggggaggggcggggcctctgggctgatggtgggt
```

Exon 12 | Start: 18302 | End: 18387 | Length: 85

```
.    .    .    .    .    .    .    .    .    .    .    .
ggaacctttctcccagccgagttcctgttctgggcttcgctgtgcatgacccatctcag

.    .    .    .    .    .    .    .    .    .    .    .
caggatggccgaggacctcatcctctactgcaccaaggaattcagcttcgtgcagctctc

.    .    .    .    .    .    .    .    .    .    .    .
agatgcctacaggtaagccctgaactgccacctccatctgccgctgccggcctctgtatc

.    .    .    .    .    .    .    .    .    .    .    .
ccccgccgcccgcggacgtggctgccttcctccccgtcccacccctccgccagacctggc

.    .    .    .    .    .    .    .    .    .    .    .
cattgcggcgctggaccagccaagggtccagccccttcagcgccagcacctctgtcccca

       |841      |851      |861      |871      |881      |891
CACGGGAAGCAGCCTGATGCCCCAGAAGAAAAACCCCGACAGTTTGGAGCTGATCCGGAG
 T  G  S  S  L  M  P  Q  K  K  N  P  D  S  L  E  L  I  R  S
       |281                        |291

       |901      |911        .    .    .    .    .    .    .
CAAGGCTGGGCGTGTGTTTGGGCGGgtgagcaaggcagggggaggggcggggcctctggg
 K  A  G  R  V  F  G  R
       |301

    .    .    .    .    .    .    .    .    .    .    .    .
ctgatggtgggtggccaggggggcaggatcccgggtccagcccctgtgcctccctcttcc

    .    .    .    .    .    .    .    .    .    .    .    .
cgcagtgtgccgggctcctgatgaccctcaagggacttcccagcacctacaacaaagact

    .    .    .    .    .    .    .    .    .    .    .    .
tacaggtgcgaggccgggggaggcctggctagtacgtgccagttctcagggctctggcac

    .    .    .    .    .    .    .    .    .    .    .    .
actcaggcagggccccaccccgggattgccatacatcctcccatcctgtgcacacagctc

    .    .    .    .    .
catccgtggctgcccttgaactctct
```

Exon 13 | Start: 18487 | End: 18547 | Length: 60

```
.    .    .    .    .    .    .    .    .    .    .    .
ccgcccgcggacgtggctgccttcctccccgtcccacccctccgccagacctggccattg

.    .    .    .    .    .    .    .    .    .    .    .
cggcgctggaccagccaagggtccagccccttcagcgccagcacctctgtccccagcacg

.    .    .    .    .    .    .    .    .    .    .    .
ggaagcagcctgatgccccagaagaaaaaccccgacagtttggagctgatccggagcaag

.    .    .    .    .    .    .    .    .    .    .    .
gctgggcgtgtgtttgggcgggtgagcaaggcaggggagggggcggggcctctgggctga

.    .    .    .    .    .    .    .    .    .    .    .
tggtgggtggccaggggggcaggatcccgggtccagcccctgtgcctccctcttcccgca

  |921      |931      |941      |951      |961      |971
TGTGCCGGGCTCCTGATGACCCTCAAGGGACTTCCCAGCACCTACAACAAAGACTTACAG
C  A  G  L  L  M  T  L  K  G  L  P  S  T  Y  N  K  D  L  Q
           |311                        |321

    .    .    .    .    .    .    .    .    .    .    .    .
gtgcgaggccgggggaggcctggctagtacgtgccagttctcagggctctggcacactca

    .    .    .    .    .    .    .    .    .    .    .    .
ggcagggccccaccccgggattgccatacatcctcccatcctgtgcacacagctccatcc

    .    .    .    .    .    .    .    .    .    .    .    .
gtggctgcccttgaactctctgcccttcctttgttggggtattgagtgttcttcccatgg

    .    .    .    .    .    .    .    .    .    .    .    .
aaggcagtggggatgcctcagtgggggggtggggctgtggggaccctgggtgccaggggg

    .    .    .    .    .    .    .    .    .    .    .    .
ctgctaggccctcacctcctgccatgtgcctcccaggaggacaaggaagctgtgtttgaa

g
```

Exon 14 | Start: 18823 | End: 18907 | Length: 84

```
.    .    .    .    .    .    .    .    .    .    .    .
cagcacctacaacaaagacttacaggtgcgaggccgggggaggcctggctagtacgtgcc

.    .    .    .    .    .    .    .    .    .    .    .
agttctcagggctctggcacactcaggcagggccccaccccgggattgccatacatcctc

.    .    .    .    .    .    .    .    .    .    .    .
ccatcctgtgcacacagctccatccgtggctgcccttgaactctctgcccttcctttgtt

.    .    .    .    .    .    .    .    .    .    .    .
ggggtattgagtgttcttcccatggaaggcagtggggatgcctcagtgggggggtggggc

.    .    .    .    .    .    .    .    .    .    .    .
tgtggggaccctgggtgccaggggctgctaggccctcacctcctgccatgtgcctccca

  |981      |991      |1001     |1011     |1021     |1031
GAGGACAAGGAAGCTGTGTTTGAAGTGTCAGACACTATGAGTGCCGTGCTCCAGGTGGCC
E  D  K  E  A  V  F  E  V  S  D  T  M  S  A  V  L  Q  V  A
            |331                          |341

  |1041     |1051     |1061 .    .    .    .    .    .    .
ACTGGCGTCATCTCTACGCTGCAGgcaagacatcacccccctgcttctcctcccctaggt
T  G  V  I  S  T  L  Q
            |351

   .    .    .    .    .    .    .    .    .    .    .    .
cccaggcactggggtgggcatgcggggagggtggccttgggaggaggtgaggtggggctg

   .    .    .    .    .    .    .    .    .    .    .    .
gaggacctggggcagggaaggagaggtgtgctcgctcctgctcctggggaacagggaaag

   .    .    .    .    .    .    .    .    .    .    .    .
gacagaaactgctgccatgcagtggaagtagatgagactcaggggggcctggggcctgtca

   .    .    .    .    .    .    .    .    .    .    .    .
aatggcctgaccagaactctttaaaaaaagaaaatctaaacaaaaggccaggtgcagtgg

   .    .    .    .    .
ctcatgcctggaatctcacactttg
```

Exon 15 | Start: 21217 | End: 21298 | Length: 81

```
.    .    .    .    .    .    .    .    .    .    .    .
agaccctgtctcctaaaacagaaaacaaatcctccaggaacatctgatgcatgctgaaga

.    .    .    .    .    .    .    .    .    .    .    .
taaggactctttgaaaacataaaggccagtaaaacatacaggccagtaagtgttcatagc

.    .    .    .    .    .    .    .    .    .    .    .
acatgtaaatattatcgataattatgagaagatggttcaagttgagagtgagacagagcc

.    .    .    .    .    .    .    .    .    .    .    .
gagtgggtaagagagtatctgcccaaggcagggatgtcctggcagaggggcaggtcctgg

.    .    .    .    .    .    .    .    .    .    .    .
gcctggcagcttcagatcccagggtccccagggctcaccactcgcccacctgtgccccca

        |1071     |1081     |1091     |1101     |1111     |1121
ATTCACCAAGAGAACATGGGACAGGCTCTCAGCCCCGACATGCTGGCCACTGACCTTGCC
I   H   Q   E   N   M   G   Q   A   L   S   P   D   M   L   A   T   D   L   A
                    |361                            |371

        |1131     |1141  .    .    .    .    .    .    .
TATTACCTGGTCCGCAAAGGGgtaagtgtgtagcagccaggggggagggtgaggagatggg
Y   Y   L   V   R   K   G
                    |381

.    .    .    .    .    .    .    .    .    .    .    .
gtgccccccccagagggtgggggagctcaggaatgggtgcaagcggcccagcctggtggc

.    .    .    .    .    .    .    .    .    .    .    .
tcacccctgtaatcccagcactttgggaagccgaggtgggcgggtcacttgaggccagga

.    .    .    .    .    .    .    .    .    .    .    .
gttcgagaccagcctggtcaacatggtgaaaccccgtctcttttgatgtaaaaatacaac

.    .    .    .    .    .    .    .    .    .    .    .
aattagctgggtgtggtggcacactcctgtaatcccagttactcgggaggctgaggcagg

.    .    .    .    .
agaattgattgaactgggaggt
```

Exon 16 | Start: 21768 | End: 21875 | Length: 107

```
.    .    .    .    .    .    .    .    .    .    .    .
agcctggtcaacatggtgaaaccccgtctcttttgatgtaaaaatacaacaattagctgg

.    .    .    .    .    .    .    .    .    .    .    .
gtgtggtggcacactcctgtaatcccagttactcgggaggctgaggcaggagaattgatt

.    .    .    .    .    .    .    .    .    .    .    .
gaactgggaggtggagtttgcggtgaggtgagatcgcgccactgcactccagcctgggca

.    .    .    .    .    .    .    .    .    .    .    .
acagagcgagactttgtgtcaaaaagaaaaaaaaaaaaaaaaggaaggggggtgcaggcaa

.    .    .    .    .    .    .    .    .    .    .    .
tggaggcagatcagggcatggagaaacctgcctcagcgccatcttcctccctggcaccca

       |1151     |1161     |1171     |1181     |1191     |1201
ATGCCATTCCGCCAGGCCCACGAGGCCTCCGGGAAAGCTGTGTTCATGGCCGAGACCAAG
M  P  F  R  Q  A  H  E  A  S  G  K  A  V  F  M  A  E  T  K
                         |391                          |401

       |1211     |1221     |1231     |1241         .    .
GGGGTCGCCCTCAACCAGCTGTCACTGCAGGAGCTGCAGACCATCAGgtacggcccatcc
G  V  A  L  N  Q  L  S  L  Q  E  L  Q  T  I  S
                         |411

 .    .    .    .    .    .    .    .    .    .    .    .
ccttccccatgctgcctcctaggaagtgagcctgggtgcctggagcccagggtggcctgg

 .    .    .    .    .    .    .    .    .    .    .    .
cgccctggcccacctcttcctctctccccagccccctgttctcgggcgacgtgatctgcg

 .    .    .    .    .    .    .    .    .    .    .    .
tgtgggactacgggcacagtgtggagcagtatggtgccctgggcggcactgcgcgctcca

 .    .    .    .    .    .    .    .    .    .    .    .
gcgtcgactggcagatccgccaggtgcgggcgctactgcaggcacagcaggcctaggtcc

 .    .    .    .    .    .    .    .    .    .
tcccacacctgccccctaataaagtgggcgcgagaggaggctgctgtg
```

Exon 17 | Start: 21979 | End: 22555 | Length: 576

```
.    .    .    .    .    .    .    .    .    .    .    .
aaaaaaaaaaaggaaggggggtgcaggcaatggaggcagatcagggcatggagaaacctgc

.    .    .    .    .    .    .    .    .    .    .    .
ctcagcgccatcttcctccctggcacccagatgccattccgccaggcccacgaggcctcc

.    .    .    .    .    .    .    .    .    .    .    .
gggaaagctgtgttcatggccgagaccaaggggggtcgccctcaaccagctgtcactgcag

.    .    .    .    .    .    .    .    .    .    .    .
gagctgcagaccatcaggtacggcccatccccttccccatgctgcctcctaggaagtgag

.    .    .    .    .    .    .    .    .    .    .    .
cctgggtgcctggagcccagggtggcctggcgccctggcccacctcttcctctctcccca

|1251     |1261     |1271     |1281     |1291     |1301
CCCCCTGTTCTCGGGCGACGTGATCTGCGTGTGGGACTACGGGCACAGTGTGGAGCAGTA
 P  L  F  S  G  D  V  I  C  V  W  D  Y  G  H  S  V  E  Q  Y
          |421                          |431

|1311     |1321     |1331     |1341     |1351     |1361
TGGTGCCCTGGGCGGCACTGCGCGCTCCAGCGTCGACTGGCAGATCCGCCAGGTGCGGGC
 G  A  L  G  G  T  A  R  S  S  V  D  W  Q  I  R  Q  V  R  A
          |441                          |451

|1371     |1381     |1391|+1       |+11      |+21      |+31
GCTACTGCAGGCACAGCAGGCCTAGGTCCTCCCACACCTGCCCCCTAATAAAGTGGGCGC
 L  L  Q  A  Q  Q  A  *
          |461

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

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

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

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

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

```
ATGCATATAGTCCCAGCTACTTGTAAGGCTGAGGTGAGAGGACACTTGTGCCCAGGAGTG

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

     |+401      |+411      |+421      |+431.     .     .     .
CTATCTCTAAAAATAAATAAATAAACGAAAAATAAAtggaagcggagaaaactgggcaag

.     .     .     .     .     .     .     .     .     .     .     .
ggcaatgagagtcgtagacgggaagggaagaggggctcccatcatagcctctgctctgt

.     .     .     .     .     .     .     .     .     .     .     .
ccaggccccatccccttcagacagggtatcacagtgacctcctaggccaggagcgatggc

.     .     .     .     .     .     .     .     .     .     .     .
tcacgcctgtaatcctagcattttgggaggcctgggcaacaggaagactccaactaccat

.     .     .     .     .     .     .     .     .     .     .     .
attaaaaaaaacatgaatgaaagcaaaaacaaaacaactagccaaactgggcgcggtggc

.     .     .     .     .     .     .     .
tcacacctgtaatcccagcactgtaggaggctgaggc
```