Gene: MFN2 - Sequence: NG_007945.1
Date : January 11, 2015

Exon 1 | Start: 1 | End: 304 | Length: 303

```
.    .    .    .    .    .    .    .    .    .    .    .
tgctcttctttcctcaaaggcgactgaagggcagcaggcccatgctcgcttctgtctgcc

.    .    .    .    .    .    .    .    .    .    .    .
cgatgagtcacttcaccctaggcctggccctctagagaacactcctctaagattacagaa

.    .    .    .    .    .    .    .    .    .    .    .
tgcaaatctggattccagagctggcagaggccccagggtcaggctctaggacaaccggcg

.    .    .    .    .    .    .    .    .    .    .    .
aaaaagcgggaacctctactccacgcccttggtttttcgccccttgacagcttgaggctc

.    .    .    .    .    .    .    .    .    .    .    .
cgccccgctttgccccgcccccccagctccggccgacgcccaccggaactacagccccca

   |-449     |-439     |-429     |-419     |-409     |-399
ATGATGCAGTGGGAGTCCGAGCCTCTGCGTCGTCCGCTTGGGACGCGCCGGCGGAGGAGT

   |-389     |-379     |-369     |-359     |-349     |-339
GGCGCGCGGAGGAGTGGCGCGCTGAGACGCCGCTCGAAGCGCCGAGTCGCGGGGCAGCAG

   |-329     |-319     |-309     |-299     |-289     |-279
AGGCGTAAGGAGTAGGCGGGGCGAGCCGGCTGGGCTCAGGGTCCACCAGCTCACCCGGGT

   |-269     |-259     |-249     |-239     |-229     |-219
CGAGGGGCAATCTGAGGCGACTGGTGACGCGCTTATCCACTTCCCTCCTCCCGCCTCCCC

   |-209     |-199     |-189     |-179     |-169     |-159
CTGGGGTGGCGCTCGCTGGTGACGTAGTGAGTGTGATGGCCGCCGCGAGGCCGGGAAGGT

   |-149.    .    .    .    .    .    .    .    .    .    .
GAAGgtgagagggcgagcaagccggggtggcggggactggcccggcccggcccggcgagt

   .    .    .    .    .    .    .    .    .    .    .    .
cctgagcagctcggcgtgggccgacgggattctggggccacgggggtctgggatgcagtc

   .    .    .    .    .    .    .    .    .    .    .    .
aagcggggtccccactctccggcctcgccgccgggccctccccggccctgagaggagggg
```

```
   .    .    .    .    .    .    .    .    .    .    .    .
gcgggccacgggacctgggactggtcggtggggtcccctgtagcttctcatcgcccccgc

   .    .    .    .    .    .    .    .    .    .    .    .
ctttccacccttcacggccatgttctacccctgccccttctctatttttcatcctgtctt

   .
catt
```

Exon 2 | Start: 305 | End: 449 | Length: 144

```
.    .    .    .    .    .    .    .    .    .    .    .
ctctgtcctcttctcccctctctggatgtacctttcccagggctcctgcagggacctccg

.    .    .    .    .    .    .    .    .    .    .    .
tggtgcctcaaacccgcacatggcggaatacgtgtgcacagtcaggattggtcccacacc

.    .    .    .    .    .    .    .    .    .    .    .
tctgcgtttttttccccagggcacttcctcacatgccagcgcaactccccaatacctcaa

.    .    .    .    .    .    .    .    .    .    .    .
tgagtaagcttccctcagggatgagtttgtttggcttgaaacctgattagacatgttttg

.    .    .    .    .    .    .    .    .    .    .    .
tacaccagtgtttttttttttttggacaccggatccatctccctttttcttttctaataagt

         |-139     |-129     |-119     |-109     |-99      |-89
TCAGGACTGGTGGAGTCAACACAGTCAATCAATAGCCAACCTCAACCTGAGACAGGACAG

         |-79      |-69      |-59      |-49      |-39      |-29
AAGAGAACTCAGAATCTTTTTGTCTTTTGGACTTCAGCCATGTCCATGATGCCTACCCTG

         |-19      |-9       .    .    .    .    .    .    .
TGAAGATCTCTCACCATCCAAAAAAgtaagtagtagctgtgacttctggcaccctggatt

    .    .    .    .    .    .    .    .    .    .    .    .
tgagctgagtggacaggggtgtgctctcctggacctctggtggcaagtctcttgaatggc

    .    .    .    .    .    .    .    .    .    .    .    .
atcctctttgtatagagccacagctttctaacttgtgttgaaaaactaccgtatctttta
```

```
    .    .    .    .    .    .    .    .    .    .    .    .
cttccgtgaaggatttcgctggttgcttagagagcctgtttaaaagttgacagttcagaa

    .    .    .    .    .    .    .    .    .    .    .    .
gtggctgggatctcttgggctccctgaagagttagtctctgtctccctcatttggtctct

    .    .    .    .    .
gctgtgctggctcttccccatctcg
```

Exon 3 | Start: 450 | End: 628 | Length: 178

```
.    .    .    .    .    .    .    .    .    .    .    .
aattactgtatttttagtagagacgggggtttcaccatgttggccaggctggtcttgaac

.    .    .    .    .    .    .    .    .    .    .    .
tcctgacctcaggtgatccacctgcctcaacctcccaaagttctgagattacaggggtga

.    .    .    .    .    .    .    .    .    .    .    .
gccaccgcgcccagcctgagacactgttcttatctcaccgtcctttgttctagtcctgga

.    .    .    .    .    .    .    .    .    .    .    .
ggttgcagtgacctgagatccccatattcttgattctccccaaagcattccgccatctcc

.    .    .    .    .    .    .    .    .    .    .    .
ctagcaggatgtcccgaggtaggtgttgctgggttcgctcacgttagcttctcttgcagc

    |1        |11       |21       |31       |41       |51
CGCAATGTCCCTGCTCTTCTCTCGATGCAACTCTATCGTCACAGTCAAGAAAAATAAGAG
    M  S  L  L  F  S  R  C  N  S  I  V  T  V  K  K  N  K  R
    |1                        |11

    |61       |71       |81       |91       |101      |111
ACACATGGCTGAGGTGAATGCATCCCCACTTAAGCACTTTGTCACTGCCAAGAAGAAGAT
 H  M  A  E  V  N  A  S  P  L  K  H  F  V  T  A  K  K  K  I
    |21                       |31

    |121      |131      |141      |151      |161      |171
CAATGGCATTTTTGAGCAGCTGGGGGGCCTACATCCAGGAGAGCGCCACCTTCCTTGAAGg
 N  G  I  F  E  Q  L  G  A  Y  I  Q  E  S  A  T  F  L  E  D
    |41                       |51

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

```
taaggggcaccggctcagccaggcccgctcttacctgtttagatatttagctagtggga

   .    .    .    .    .    .    .    .    .    .    .    .
tttgcgggtggggaggtatatctctgctcccagggaagtcataaccagatagccttagaa

   .    .    .    .    .    .    .    .    .    .    .    .
atgctctgctcttgaaatcatgtggaattggagtctggggagatgaggccaggaagacaa

   .    .    .    .    .    .    .    .    .    .    .    .
gggaactgccatttagtaattactttaagaagtccacatgttttgtttcatttaatcatg

   .    .    .    .    .    .    .    .    .    .    .    .
aaagataggtgaatcttatccccatctacaaggcaagcaaattgaggtttgagagttgt


Exon 4 | Start: 629 | End: 764 | Length: 135


.    .    .    .    .    .    .    .    .    .    .    .
gttatctccgttttgtgcttaaggaaactaagacccagaaaggttcttttgcttgaggcc

.    .    .    .    .    .    .    .    .    .    .    .
acagagctagaaagtggtaagaaccagcttcagaaccaggcagtgttgctcctgagccat

.    .    .    .    .    .    .    .    .    .    .    .
cttcttaaccaccacaccgtggggccaccatagaggatctggagctcagcctgtcggctg

.    .    .    .    .    .    .    .    .    .    .    .
cagggtgccagaggtggactcgtttagggtaagcagggccggcgctctggcccttccaga

.    .    .    .    .    .    .    .    .    .    .    .
cttgggactgtggaactcctctgaccacgtggtgacccattttcaatccccacctccaga

     |181      |191      |201      |211      |221      |231
ACACGTACAGGAATGCAGAACTGGACCCCGTTACCACAGAAGAACAGGTTCTGGACGTCA
  T   Y   R   N   A   E   L   D   P   V   T   T   E   E   Q   V   L   D   V   K
     |61                           |71

     |241      |251      |261      |271      |281      |291
AAGGTTACCTATCCAAAGTGAGAGGCATCAGTGAGGTGCTGGCTCGGAGGCACATGAAAG
  G   Y   L   S   K   V   R   G   I   S   E   V   L   A   R   R   H   M   K   V
     |81                           |91

     |301      |311 .    .    .    .    .    .    .    .
```

```
TGGCTTTTTTTGGCCGgtaagtccttgaggcacccacccttttctttcttcctggctagga
  A  F  F  G  R
     |101

.    .    .    .    .    .    .    .    .    .    .    .
gggagggaggcactttgtgcaaggtcacagaacgttccaggcagggacatgcttcagaat

.    .    .    .    .    .    .    .    .    .    .    .
tcattgctttcctcttaatttatatttttatttatttatttgatttttgagacagggttct

.    .    .    .    .    .    .    .    .    .    .    .
ctgtcacccaggctggaagctcattacagcctcgacctccctgggctcaggtgatcctcc

.    .    .    .    .    .    .    .    .    .    .    .
cacctgagcctcctgagcagctgggactgcaggtgcatgccatcaagcctgacttttttt

.    .    .    .
tttttattttctaatt
```

Exon 5 | Start: 765 | End: 927 | Length: 162

```
.    .    .    .    .    .    .    .    .    .    .    .
gacagacagtctctataagtgttgctgagggtggctgtgtgattcaaggggcagacagca

.    .    .    .    .    .    .    .    .    .    .    .
cgcagtgagcctcttgtagattgatctgaaatgatgaaccaggggcatgtcagaggtttg

.    .    .    .    .    .    .    .    .    .    .    .
ggcctgggggtgtttattcattttaataaacagtgcctactctttgtctctcagcactgt

.    .    .    .    .    .    .    .    .    .    .    .
ctgggcactggcaacattgcactgaatagggctttggccttccaggctggtatctgcgtt

.    .    .    .    .    .    .    .    .    .    .    .
gtgaaagtaattcaggtcagatactggtggctttgctgacagctgttacttccttctagg

         |321      |331      |341      |351      |361      |371
GACGAGCAATGGGAAGAGCACCGTGATCAATGCCATGCTCTGGGACAAAGTTCTGCCCTC
 T  S  N  G  K  S  T  V  I  N  A  M  L  W  D  K  V  L  P  S
                   |111                          |121

         |381      |391      |401      |411      |421      |431
```

```
TGGGATTGGCCACACCACCAATTGCTTCCTGCGGGTAGAGGGCACAGATGGCCATGAGGC
 G  I  G  H  T  T  N  C  F  L  R  V  E  G  T  D  G  H  E  A
                  |131                        |141

         |441      |451      |461      |471    .    .    .
CTTTCTCCTTACCGAGGGCTCAGAGGAAAAGAGGAGTGCCAAGgtgagggtgccaggctg
 F  L  L  T  E  G  S  E  E  K  R  S  A  K
                  |151

   .    .    .    .    .    .    .    .    .    .    .    .
gctgtcagccctgtgcctgctgggggagcaagtcctccgttgtgacacggctgacctcac

   .    .    .    .    .    .    .    .    .    .    .    .
ctctagggaggggcagcaccaccctgtggaggtgaatgggagaccctattttagatgaa

   .    .    .    .    .    .    .    .    .    .    .    .
ctttttgaaggatgtaagagctttgggggctggcggaggtggttttcagaaacgtggat

   .    .    .    .    .    .    .    .    .    .    .    .
caccaagaatgaggaccctgctgttcctcatacagctctgagtggccactgacctctctt

   .    .    .    .    .    .    .    .    .
cactaattaaggaagacagtatgtgctgtgttcttccttggga


Exon 6 | Start: 928 | End: 1052 | Length: 124


.    .    .    .    .    .    .    .    .    .    .    .
actgtactccaaacctgggtgacagagcgagactccgtctcaaaaaaaaaaaaaaaaaaa

.    .    .    .    .    .    .    .    .    .    .    .
gaatcaatcagtgcagaacagatgactttagggtgatatccgggaaagaagctcaaaaga

.    .    .    .    .    .    .    .    .    .    .    .
gcagtgaagaaagtgggttcttattgacaactcccagctgttaacttttttatatgtggaa

.    .    .    .    .    .    .    .    .    .    .    .
gaagaaagggtagcagatgggcagcattcccagccactgtgctgtgatgcagcggcacag

.    .    .    .    .    .    .    .    .    .    .    .
gaaatctcctggcctggtggttcctcctcagcctctttctttccttcctctgccatcaga

      |481      |491      |501      |511      |521      |531
```

```
ACTGTGAACCAGCTGGCCCATGCCCTCCACCAGGACAAGCAGCTCCATGCCGGCAGCCTA
T  V  N  Q  L  A  H  A  L  H  Q  D  K  Q  L  H  A  G  S  L
      |161                        |171

      |541      |551      |561      |571      |581      |591
GTGAGTGTGATGTGGCCCAACTCTAAGTGCCCACTTCTGAAGGATGACCTCGTTTTGATG
V  S  V  M  W  P  N  S  K  C  P  L  L  K  D  D  L  V  L  M
      |181                        |191

         .    .    .    .    .    .    .    .    .    .    .
GACAGgtaagagggaggtgccctcctaggaggtccaaactggaaggcaccaggtttccat
D  S


    .    .    .    .    .    .    .    .    .    .    .    .
ttctggataatctaggccagggtccctgggccccatccttgctctgcttaagtattacta

    .    .    .    .    .    .    .    .    .    .    .    .
cctttcagatgggctcaaccaaatcctctggcctcttggctttcctctggagtctggtta

    .    .    .    .    .    .    .    .    .    .    .    .
ctatacctatttatcagtaccctgcagatgtcccagggatggtctgtaaaagataggagg

    .    .    .    .    .    .    .    .    .    .    .    .
gatgctcaaaagttggtgggggaggttctcaatctcagcccagtgccagcatgtgtactg

    .
ggggt


Exon 7 | Start: 1053 | End: 1161 | Length: 108


.    .    .    .    .    .    .    .    .    .    .    .
ctgggaggcggaggttgcagtgagccgagatcgtgccattgcactccagcccgggcgaca

.    .    .    .    .    .    .    .    .    .    .    .
gagcaagactctatatccaaaaacaaaacaaaacaaaacaaaacactcatttccaggcaa

.    .    .    .    .    .    .    .    .    .    .    .
tctggaaggataggaaatgggaagtaaaatccgttaatgagggccaggcctgatttctct

.    .    .    .    .    .    .    .    .    .    .    .
cccgtccctggctttctcctccatgacctgcctgcctcacaagtcccaggtctgttctca
```

```
.    .    .    .    .    .    .    .    .    .    .    .
gcaggaagaatagggctcctgctctgcctgatgatttggtttacccctgtcacctttagc

 |601      |611      |621      |631      |641      |651
CCCTGGTATTGATGTCACCACAGAGCTGGACAGCTGGATTGACAAGTTTTGTCTGGATGC
 P  G  I  D  V  T  T  E  L  D  S  W  I  D  K  F  C  L  D  A
 |201                         |211

 |661      |671      |681      |691      |701        .    .
TGATGTGTTTGTGCTGGTGGCCAACTCAGAGTCCACCCTGATGCAGACGgtaactcctcc
 D  V  F  V  L  V  A  N  S  E  S  T  L  M  Q  T
 |221                         |231

   .    .    .    .    .    .    .    .    .    .    .    .
tctgccttctcccaagctcccagcacccccctgggcaggcagctgatggggccttggctgt

   .    .    .    .    .    .    .    .    .    .    .    .
caagctcctgctccaccgaggtcttacccttttatctaggaaaagcacttcttccacaagg

   .    .    .    .    .    .    .    .    .    .    .    .
tgagtgagcgtctctcccggccaaacatcttcatcctgaacaaccgctgggatgcatctg

   .    .    .    .    .    .    .    .    .    .    .    .
cctcagagcccgagtacatggaggaggttcgtgcttctgtttggcagtttggggaatgca

   .    .    .    .    .    .    .    .    .    .
accccgagggagcactgcctgccactggggccacttcctgcacccctgg


Exon 8 | Start: 1162 | End: 1269 | Length: 107


.    .    .    .    .    .    .    .    .    .    .    .
acaagtcccaggtctgttctcagcaggaagaatagggctcctgctctgcctgatgatttg

.    .    .    .    .    .    .    .    .    .    .    .
gtttacccctgtcacctttagccctggtattgatgtcaccacagagctggacagctggat

.    .    .    .    .    .    .    .    .    .    .    .
tgacaagttttgtctggatgctgatgtgtttgtgctggtggccaactcagagtccaccct

.    .    .    .    .    .    .    .    .    .    .    .
gatgcagacggtaactcctcctctgccttctcccaagctcccagcacccccctgggcaggc
```

```
.    .    .    .    .    .    .    .    .    .    .    .
agctgatggggccttggctgtcaagctcctgctccaccgaggtcttacccttttatctagg

  |711      |721      |731      |741      |751      |761
GAAAAGCACTTCTTCCACAAGGTGAGTGAGCGTCTCTCCCGGCCAAACATCTTCATCCTG
E  K  H  F  F  H  K  V  S  E  R  L  S  R  P  N  I  F  I  L
            |241                        |251

  |771      |781      |791      |801      |811      .    .
AACAACCGCTGGGATGCATCTGCCTCAGAGCCCGAGTACATGGAGGAGgttcgtgcttct
N  N  R  W  D  A  S  A  S  E  P  E  Y  M  E  E
            |261                        |271

  .    .    .    .    .    .    .    .    .    .    .    .
gtttggcagtttggggaatgcaaccccgagggagcactgcctgccactggggccacttcc

  .    .    .    .    .    .    .    .    .    .    .    .
tgcacccctggatctagtgacttccctgaattaattttattgccaaagaattctccaaat

  .    .    .    .    .    .    .    .    .    .    .    .
actcttctgtggtatcttctggtggtctttcccctctcccatccactttgctggatgcac

  .    .    .    .    .    .    .    .    .    .    .    .
cccctcttcaagccactctcccctaggcctaaaaaggatccctgctgcattagtgcatct

  .    .    .    .    .    .    .    .    .    .
tcagtgccggtgctcagtttggtttctgaggaattaatacagaacagg
```

Exon 9 | Start: 1270 | End: 1423 | Length: 153

```
.    .    .    .    .    .    .    .    .    .    .    .
ccaggttcaagtgattctcctgcctcagcctcctgagtagctgggattacaggcgcctgc

.    .    .    .    .    .    .    .    .    .    .    .
caccatgcctggctaatttttttgtatttttagtagagacagggtttcaccatggtggcc

.    .    .    .    .    .    .    .    .    .    .    .
aggctggtcttgaactcccgacctcaagtgatccacctgccttggcttcccaaagtgctg

.    .    .    .    .    .    .    .    .    .    .    .
ggattacaggcgtcagccaccatgcccagcctcttatgacctattcttttaataaaagag
```

```
.    .    .    .    .    .    .    .    .    .    .    .
gcaggtgggggctgtggggccacctacactcactctggacacatttgtttgggctccagg

    |821      |831      |841      |851      |861      |871
GTGCGGCGGCAGCACATGGAGCGTTGTACCAGCTTCCTGGTGGATGAGCTGGGCGTGGTG
V  R  R  Q  H  M  E  R  C  T  S  F  L  V  D  E  L  G  V  V
                       |281                      |291

    |881      |891      |901      |911      |921      |931
GATCGATCCCAGGCCGGGGACCGCATCTTCTTTGTGTCTGCTAAGGAGGTGCTCAACGCC
D  R  S  Q  A  G  D  R  I  F  F  V  S  A  K  E  V  L  N  A
                       |301                      |311

    |941      |951      |961          .    .    .    .    .
AGGATTCAGAAAGCCCAGGGCATGCCTGAAGGAGgtaatgatgagaacagatgtcctcct
R  I  Q  K  A  Q  G  M  P  E  G  G
                       |321

   .    .    .    .    .    .    .    .    .    .    .    .
tttctctgatgtttgagacattttgtctcgtgctgaggagtctgtcagtagaaaatcctt

   .    .    .    .    .    .    .    .    .    .    .    .
ctgagaaggggatgctgagaagagcagagaggctcttgctctttagccagtggcttggtt

   .    .    .    .    .    .    .    .    .    .    .    .
tctggggatttcatcgttttcctctgctgccaagttgtttctggactaatgcagtacaat

   .    .    .    .    .    .    .    .    .    .    .    .
cctcctagggggcgctctcgcagaaggctttcaagtgaggatgtttgagtttcagaattt

   .    .    .    .    .    .    .
tgagaggagatttgaggtgagtcctctgattctg


Exon 10 | Start: 1424 | End: 1491 | Length: 67


.    .    .    .    .    .    .    .    .    .    .    .
caggccggggaccgcatcttctttgtgtctgctaaggaggtgctcaacgccaggattcag

.    .    .    .    .    .    .    .    .    .    .    .
aaagcccagggcatgcctgaaggaggtaatgatgagaacagatgtcctccttttctctga
```

```
.    .    .    .    .    .    .    .    .    .    .    .
tgtttgagacattttgtctcgtgctgaggagtctgtcagtagaaaatccttctgagaagg

.    .    .    .    .    .    .    .    .    .    .    .
ggatgctgagaagagcagagaggctcttgctctttagccagtggcttggtttctggggat

.    .    .    .    .    .    .    .    .    .    .    .
ttcatcgttttcctctgctgccaagttgtttctggactaatgcagtacaatcctcctagg

|971      |981      |991      |1001     |1011     |1021
GGGGCGCTCTCGCAGAAGGCTTTCAAGTGAGGATGTTTGAGTTTCAGAATTTTGAGAGGA
  G  A  L  A  E  G  F  Q  V  R  M  F  E  F  Q  N  F  E  R  R
                   |331                          |341

|1031      .    .    .    .    .    .    .    .    .    .
GATTTGAGgtgagtcctctgattctggtatctggcgattctgtgcctccccagctcccat
  F  E


  .    .    .    .    .    .    .    .    .    .    .    .
tggctgtgtccctggcagtgaaaaccagagtctggcccttggttgtaggcccctggtggc

  .    .    .    .    .    .    .    .    .    .    .    .
ccccacctccctccgtgcctctgtgtgttccaggagtgcatctcccagtctgcagtgaag

  .    .    .    .    .    .    .    .    .    .    .    .
accaagtttgagcagcacacggtccgggccaagcagattgcagaggcggttcgactcatc

  .    .    .    .    .    .    .    .    .    .    .    .
atggactccctgcacatggcggctcgggagcagcagtaagagtccaagactgcagatagg

  .    .
tggagaga


Exon 11 | Start: 1492 | End: 1613 | Length: 121


.    .    .    .    .    .    .    .    .    .    .    .
ttagccagtggcttggtttctggggatttcatcgttttcctctgctgccaagttgtttct

.    .    .    .    .    .    .    .    .    .    .    .
ggactaatgcagtacaatcctcctaggggggcgctctcgcagaaggctttcaagtgaggat
```

```
.    .    .    .    .    .    .    .    .    .    .    .
gtttgagtttcagaattttgagaggagatttgaggtgagtcctctgattctggtatctgg

.    .    .    .    .    .    .    .    .    .    .    .
cgattctgtgcctccccagctcccattggctgtgtccctggcagtgaaaaccagagtctg

.    .    .    .    .    .    .    .    .    .    .    .
gcccttggttgtaggcccctggtggcccccacctccctccgtgcctctgtgtgttccagg

  |1041     |1051     |1061     |1071     |1081     |1091
GAGTGCATCTCCCAGTCTGCAGTGAAGACCAAGTTTGAGCAGCACACGGTCCGGGCCAAG
E  C  I  S  Q  S  A  V  K  T  K  F  E  Q  H  T  V  R  A  K
            |351                          |361

  |1101     |1111     |1121     |1131     |1141     |1151
CAGATTGCAGAGGCGGTTCGACTCATCATGGACTCCCTGCACATGGCGGCTCGGGAGCAG
Q  I  A  E  A  V  R  L  I  M  D  S  L  H  M  A  A  R  E  Q
            |371                          |381

      .    .    .    .    .    .    .    .    .    .    .
CAgtaagagtccaagactgcagataggtggagagagctgccgagacaagggtgctccacc
Q


 .    .    .    .    .    .    .    .    .    .    .    .
cctgccttgggcagttaggacacgccttgatggcagggctgagtctctgggctcccatcc

 .    .    .    .    .    .    .    .    .    .    .    .
agagccctttccctggccaccagaccatgttagaaccacatagacagcctggtgaggagg

 .    .    .    .    .    .    .    .    .    .    .    .
gcggctgggtgcttcatcaccccacctggtctgtgcagcacgattccctgtgttggaggt

 .    .    .    .    .    .    .    .    .    .    .    .
cttggcccatgccctgctgagctctgcagccattctcagagcctgaacacatttttcaaa

 .
ac


Exon 12 | Start: 1614 | End: 1740 | Length: 126


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

```
ttactagtgaggttgagctttttttccctatattaattggcagaatttgtttaaaccccct

.    .    .    .    .    .    .    .    .    .    .    .
taaagcgccctccctgttttgtgcccaccacctgacccacatcgaagactgaagagtgca

.    .    .    .    .    .    .    .    .    .    .    .
tggttggctgcagggtcctcttcttacctgggaaggggaaggccatgcccctgggtgcgt

.    .    .    .    .    .    .    .    .    .    .    .
gtgtgcagccctgccaggcaagatagcgggcagggcggcgtgggatttctggcatcccct

.    .    .    .    .    .    .    .    .    .    .    .
cttgctcctctgcttagtcagacaggaacatggatttctcaccagtactctgctttcagg

|1161     |1171     |1181     |1191     |1201     |1211
GGTTTACTGCGAGGAAATGCGTGAAGAGCGGCAAGACCGACTGAAATTTATTGACAAACA
 V  Y  C  E  E  M  R  E  E  R  Q  D  R  L  K  F  I  D  K  Q
          |391                          |401

|1221     |1231     |1241     |1251     |1261     |1271
GCTGGAGCTCTTGGCTCAAGACTATAAGCTGCGAATTAAGCAGATTACGGAGGAAGTGGA
 L  E  L  L  A  Q  D  Y  K  L  R  I  K  Q  I  T  E  E  V  E
          |411                          |421

|1281      .    .    .    .    .    .    .    .    .    .
GAGGCAGgtgagaaatgaggaggaggcattctgggaagatttggactccgagtagagtcc
 R  Q


 .    .    .    .    .    .    .    .    .    .    .    .
agaagaaagcagacctcctcctcttagggacttctcagcctttcagaagaaagttgtggc

 .    .    .    .    .    .    .    .    .    .    .    .
cctgtttcaagaatacagagctgccgtttgggttccattgtcgggttgtgtgatgctggg

 .    .    .    .    .    .    .    .    .    .    .    .
catgttccctttcctctggacctccacagatcatgtgggcgtttgatcagccagtttccc

 .    .    .    .    .    .    .    .    .    .    .    .
agaccctctcacttcagaggctttaattccatagaggagctgaggaggctgctggtttga

 .    .
gaggaag
```

Exon 13 | Start: 1741 | End: 1845 | Length: 104

```
.    .    .    .    .    .    .    .    .    .    .    .
cctttcagaagaaagttgtggccctgtttcaagaatacagagctgccgtttgggttccat

.    .    .    .    .    .    .    .    .    .    .    .
tgtcgggttgtgtgatgctgggcatgttccctttcctctggacctccacagatcatgtgg

.    .    .    .    .    .    .    .    .    .    .    .
gcgtttgatcagccagtttcccagaccctctcacttcagaggctttaattccatagagga

.    .    .    .    .    .    .    .    .    .    .    .
gctgaggaggctgctggtttgagaggaaggatgtgccatctgctaggatctctcctggtg

.    .    .    .    .    .    .    .    .    .    .    .
ctgcaggagtgaactttggtcttccttgatacttaacagtgtgcttccttttgctgtagg

   |1291     |1301     |1311     |1321     |1331     |1341
GTGTCGACTGCAATGGCCGAGGAGATCAGGCGCCTCTCTGTACTGGTGGACGATTACCAG
V  S  T  A  M  A  E  E  I  R  R  L  S  V  L  V  D  D  Y  Q
   |431                        |441

   |1351     |1361     |1371     |1381     |1391 .    .    .
ATGGACTTCCACCCTTCTCCAGTAGTCCTCAAGGTTTATAAGAATgtgagtcatggagca
M  D  F  H  P  S  P  V  V  L  K  V  Y  K  N
   |451                        |461

    .    .    .    .    .    .    .    .    .    .    .    .
acaggtcctcttggcaggaggcccccaaaagtgattcaacccctgttggtctgggtcagg

    .    .    .    .    .    .    .    .    .    .    .    .
gccccccagcagtgacagtagaagccacagagacaaggcccaggcttccgtcagccttct

    .    .    .    .    .    .    .    .    .    .    .    .
ggggtcacctggtggatgtggcctgaagggaattttgatggacatgcttctcttaacttc

    .    .    .    .    .    .    .    .    .    .    .    .
cctcttctggtggcaggagctgcaccgccacatagaggaaggactgggtcgaaacatgtc

    .    .    .    .    .    .    .    .    .
tgaccgctgctccacggccatcaccaactccctgcagaccatgca
```

Exon 14 | Start: 1846 | End: 1948 | Length: 102

```
.    .    .    .    .    .    .    .    .    .    .    .
cgaggagatcaggcgcctctctgtactggtggacgattaccagatggacttccacccttc

.    .    .    .    .    .    .    .    .    .    .    .
tccagtagtcctcaaggtttataagaatgtgagtcatggagcaacaggtcctcttggcag

.    .    .    .    .    .    .    .    .    .    .    .
gaggcccccaaaagtgattcaacccctgttggtctgggtcagggcccccagcagtgaca

.    .    .    .    .    .    .    .    .    .    .    .
gtagaagccacagagacaaggcccaggcttccgtcagccttctggggtcacctggtggat

.    .    .    .    .    .    .    .    .    .    .    .
gtggcctgaagggaattttgatggacatgcttctcttaacttccctcttctggtggcagg

        |1401     |1411     |1421     |1431     |1441     |1451
GAGCTGCACCGCCACATAGAGGAAGGACTGGGTCGAAACATGTCTGACCGCTGCTCCACG
E  L  H  R  H  I  E  E  G  L  G  R  N  M  S  D  R  C  S  T
                  |471                          |481

        |1461     |1471     |1481     |1491    .    .    .
GCCATCACCAACTCCCTGCAGACCATGCAGCAGGACATGATAGgttagtgcccatgggga
A  I  T  N  S  L  Q  T  M  Q  Q  D  M  I  D
                  |491

  .    .    .    .    .    .    .    .    .    .    .    .
actgggcagctgtggccctgggctgcccaaagatcagatgcggaggccaagctaaagaaa

  .    .    .    .    .    .    .    .    .    .    .    .
tcaggactttccttatctgtcacttttcatgatgattcaactcgataccttcaggttctg

  .    .    .    .    .    .    .    .    .    .    .    .
ggtacatgttctgaactcattcttgtttgctttttgagacagagtcgcactccgtaaccc

  .    .    .    .    .    .    .    .    .    .    .    .
aggctggagtgcagtggcatgatcttggctcactgcaacctctgccaccgaggttcaagc

  .    .    .    .    .    .    .    .    .
gattcttctgctccagcgtcccgagtagctgcgactacaggcg
```

```
Exon 15 | Start: 1949 | End: 2169 | Length: 220


.    .    .    .    .    .    .    .    .    .    .    .
ggagcccatcttgttctactacatgggtctaccctaggctgagaattgggcctgctcctt

.    .    .    .    .    .    .    .    .    .    .    .
taagtccacgtgaggcataagtgttagcagtatggcatctgagtccacacttgcctggga

.    .    .    .    .    .    .    .    .    .    .    .
gagctggcctcaagtgaggcatgctcagtctcacgggccaacttgactggggtgtggttc

.    .    .    .    .    .    .    .    .    .    .    .
ccaggcaaagctgttcagcatccctggcagtagctggtagagccctgtctccaaggcttg

.    .    .    .    .    .    .    .    .    .    .    .
gtgccgctgtggtgcagggctgagctgataagcttttcctccatttctcttcctgacaga

     |1501     |1511     |1521     |1531     |1541     |1551
ATGGCTTGAAACCCCTCCTTCCTGTGTCTGTGCGGAGTCAGATAGACATGCTGGTCCCAC
  G  L  K  P  L  L  P  V  S  V  R  S  Q  I  D  M  L  V  P  R
     |501                        |511

     |1561     |1571     |1581     |1591     |1601     |1611
GCCAGTGCTTCTCCCTCAACTATGACCTAAACTGTGACAAGCTGTGTGCTGACTTCCAGG
  Q  C  F  S  L  N  Y  D  L  N  C  D  K  L  C  A  D  F  Q  E
     |521                        |531

     |1621     |1631     |1641     |1651     |1661     |1671
AAGACATTGAGTTCCATTTCTCTCTCGGATGGACCATGCTGGTGAATAGGTTCCTGGGCC
  D  I  E  F  H  F  S  L  G  W  T  M  L  V  N  R  F  L  G  P
     |541                        |551

     |1681     |1691     |1701     |1711     .    .    .
CCAAGAACAGCCGTCGGGCCTTGATGGGCTACAATGACCAGgcaagcaaagttcctcacc
  K  N  S  R  R  A  L  M  G  Y  N  D  Q
     |561                        |571

.    .    .    .    .    .    .    .    .    .    .    .
tcaagggcattgtgggggtcagtctgtaccctgcctccagacacgggaaccattctaaa

.    .    .    .    .    .    .    .    .    .    .    .
acgggggttccctaaggtcagcagctgtggtggtgtgccccaccacacagtacaccacag

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

```
acagaatttttgctactgattgacctggatttgttctaagcagtgatatttgtgaaatga

.    .    .    .    .    .    .    .    .    .    .    .
cagatgctagtatttttctctaatacacattaaagtaagtatgtaactattaaaaataga

.    .    .    .    .    .    .    .    .
cgactttaaaaataaccacctacatacgactattttaaagt
```

Exon 16 | Start: 2170 | End: 2325 | Length: 155

```
.    .    .    .    .    .    .    .    .    .    .    .
ttaaaaacattcatctctaaaccacttgagttgtcacatgtactgccctctgtacacatc

.    .    .    .    .    .    .    .    .    .    .    .
ccacactcggggaagctgccaggcgggtcaggatggctcctgctcacattttgcacgtcc

.    .    .    .    .    .    .    .    .    .    .    .
cgtggtgctcacctgagggtctcctctgctacatctgaagctagttgtccccttttgcc

.    .    .    .    .    .    .    .    .    .    .    .
ttttggaaattgaagagccactctgtgtccctgttccccagactagggcaacactgaggg

.    .    .    .    .    .    .    .    .    .    .    .
ttcacgtgaatgagagactcaatacgtccccctcacccctctcatgtttctctcctcagg

    |1721     |1731     |1741     |1751     |1761     |1771
GTCCAGCGTCCCATCCCTCTGACGCCAGCCAACCCCAGCATGCCCCCACTGCCACAGGGC
V  Q  R  P  I  P  L  T  P  A  N  P  S  M  P  P  L  P  Q  G
                       |581                            |591

    |1781     |1791     |1801     |1811     |1821     |1831
TCGCTCACCCAGGAGGAGTTCATGGTTTCCATGGTTACCGGCCTGGCCTCCTTGACATCC
S  L  T  Q  E  E  F  M  V  S  M  V  T  G  L  A  S  L  T  S
                       |601                            |611

    |1841     |1851     |1861     |1871 .    .    .    .
AGGACCTCCATGGGCATTCTTGTTGTTGGAGGAGTGgtcagtgaccagttctgctcggga
R  T  S  M  G  I  L  V  V  G  G  V
                       |621

.    .    .    .    .    .    .    .    .    .    .    .
aggtgggggcggagggcaggtgggcggggcctgagggctaggttcctgctgtggcccctg
```

```
.    .    .    .    .    .    .    .    .    .    .    .
cattgggccacactccacagtccactgcatactttctcctctgtgattgcatggggagcg

.    .    .    .    .    .    .    .    .    .    .    .
cttactccctcaccaagtttccctcacttcctgctggacatggtcccagaccttctggcc

.    .    .    .    .    .    .    .    .    .    .    .
tcggtgggatcaaaggagacattgaaagaggaactcagagtagaaacatgaaggctcctt

.    .    .    .    .    .    .    .
ggctggggcccttcagatggccctggtagtgatggg
```

Exon 17 | Start: 2326 | End: 2522 | Length: 196

```
.    .    .    .    .    .    .    .    .    .    .    .
gctaggttcctgctgtggcccctgcattgggccacactccacagtccactgcatactttc

.    .    .    .    .    .    .    .    .    .    .    .
tcctctgtgattgcatggggagcgcttactccctcaccaagtttccctcacttcctgctg

.    .    .    .    .    .    .    .    .    .    .    .
gacatggtcccagaccttctggcctcggtgggatcaaaggagacattgaaagaggaactc

.    .    .    .    .    .    .    .    .    .    .    .
agagtagaaacatgaaggctccttggctggggcccttcagatggccctggtagtgatggg

.    .    .    .    .    .    .    .    .    .    .    .
ccccagaggagggtgggccacagagaggctgcactccaggctgaccatgtgctctgcagg

        |1881     |1891     |1901     |1911     |1921     |1931
GTGTGGAAGGCAGTGGGCTGGCGGCTCATTGCCCTCTCCTTTGGGCTCTATGGCCTCCTC
V  W  K  A  V  G  W  R  L  I  A  L  S  F  G  L  Y  G  L  L
                  |631                          |641

        |1941     |1951     |1961     |1971     |1981     |1991
TACGTCTATGAGCGTCTGACCTGGACCACCAAGGCCAAGGAGAGGGCCTTCAAGCGCCAG
Y  V  Y  E  R  L  T  W  T  T  K  A  K  E  R  A  F  K  R  Q
                  |651                          |661

        |2001     |2011     |2021     |2031     |2041     |2051
TTTGTGGAGCATGCCAGCGAGAAGCTGCAGCTTGTCATCAGCTACACTGGCTCCAACTGC
```

```
F  V  E  H  A  S  E  K  L  Q  L  V  I  S  Y  T  G  S  N  C
                  |671                        |681

        |2061       .    .    .    .    .    .    .    .
AGCCACCAAGTCCAGCAgtgagtggccctgtcggaccccagcaggggacttcctttaggc
S  H  Q  V  Q  Q


 .    .    .    .    .    .    .    .    .    .    .    .
agggtcagccccatctcccttccccatctctcttcccacgtggcctggaagccactgggt

 .    .    .    .    .    .    .    .    .    .    .    .
cctaagcatcgtagaccctgggccttcaggtgtgcagggccagctttgaggccagtcatg

 .    .    .    .    .    .    .    .    .    .    .    .
gggagaggggtctcccagggacactttgcgtcttgggctgggacggggtaggcctctggg

 .    .    .    .    .    .    .    .    .    .    .    .
ccccttggtgaggaagaaatgggaaggcaagagatattcctagtaggagttttagaggtt

 .    .    .    .
gccttgaagagcttggg


Exon 18 | Start: 2523 | End: 2657 | Length: 134


.    .    .    .    .    .    .    .    .    .    .    .
gacgtgtcctctgctactcggctgatgagcagcagagtcaggatctcttgtgcccaaacc

.    .    .    .    .    .    .    .    .    .    .    .
agggtgcacagctctgtgctgttgcttctcaggccgtggtgatgctgagtgtgtttggtt

.    .    .    .    .    .    .    .    .    .    .    .
gttatgattattcagtctcagcagggtgtaggagattctgccaaaccaggcctggctcag

.    .    .    .    .    .    .    .    .    .    .    .
ggcagagctgctggcagggatatagacaggcccagctgctccctactgtgggtgggctaa

.    .    .    .    .    .    .    .    .    .    .    .
gccaccagtggcatcttgctccacacaccccaactgggtcccttctctctcctccccagg

 |2071     |2081     |2091     |2101     |2111     |2121
GGAACTGTCTGGGACCTTTGCTCATCTGTGTCAGCAAGTTGACGTCACCCGGGAGAACCT
```

```
 E  L  S  G  T  F  A  H  L  C  Q  Q  V  D  V  T  R  E  N  L
 |691                        |701

 |2131     |2141     |2151     |2161     |2171     |2181
GGAGCAGGAAATTGCCGCCATGAACAAGAAAATTGAGGTTCTTGACTCACTTCAGAGCAA
 E  Q  E  I  A  A  M  N  K  K  I  E  V  L  D  S  L  Q  S  K
 |711                        |721

 |2191     |2201   .    .    .    .    .    .    .    .    .
AGCAAAGCTGCTCAGgtgaggctggcccgtgtggccaaaggttagggctccagggtgcag
 A  K  L  L  R
 |731

    .    .    .    .    .    .    .    .    .    .    .    .
cccaggcacactggggctcagctgctgggcttgcgtcttgggtgtggacacaaatttttc

    .    .    .    .    .    .    .    .    .    .    .    .
tggtggggatttagctcattcgtgttagatgtgtaccatgggctgggcacggtggctgac

    .    .    .    .    .    .    .    .    .    .    .    .
gcctataatcccagcactttgggaggctgaggcaggtagatcacctgaggtcaggagttt

    .    .    .    .    .    .    .    .    .    .    .    .
gagactagcctgaccaacatggtgaaaccccgtctctactaaaaatacaaagattagctg

    .    .    .
gtcgtggtggtgtgt
```

Exon 19 | Start: 2658 | End: 4677 | Length: 2019

```
.    .    .    .    .    .    .    .    .    .    .    .
gggaaactgagttcccgacagctcagggacttgcacatggtcctgggtgaaggaaacaca

.    .    .    .    .    .    .    .    .    .    .    .
gggcttgagaatcagaaaagcctaacttgtagctccctggcttattagccgtgtggcctt

.    .    .    .    .    .    .    .    .    .    .    .
gggaagttatttaacccctctgggcctccttttccccatctgtgagacagggataaacac

.    .    .    .    .    .    .    .    .    .    .    .
gattgttggaggatgatgtaagggtgtgtgtcaagcgtccttaggatggtgcctggcggg
```

```
.    .    .    .    .    .    .    .    .    .    .    .
tagtcctaatactgcctatcatcagctatcatggttacaaaagaaccatttctttgcagg

      |2211      |2221      |2231      |2241      |2251      |2261
GAATAAAGCCGGTTGGTTGGACAGTGAGCTCAACATGTTCACACACCAGTACCTGCAGCC
 N  K  A  G  W  L  D  S  E  L  N  M  F  T  H  Q  Y  L  Q  P
               |741                          |751

      |2271          |+11       |+21       |+31       |+41
CAGCAGATAGTGGGCACCTGAGGCGGAGTCTGCGTGGAGAGGGGCGGTGCTGCCAGCCCT
 S  R  *


|+51       |+61       |+71       |+81       |+91       |+101
AAGTGCCATGTGGGCTCCCCCAGGGGCACGTGTGGCTCCTGCCCCCTGGCCACTGCCAAG

|+111      |+121      |+131      |+141      |+151      |+161
AGAATGAAGCACCCAGTCTCGTACCATTTTGAGCCCTCCAGCACTACTTATTTTCCCCCA

|+171      |+181      |+191      |+201      |+211      |+221
CCTTTGCCTGCTGTTGCTGGAAGAGCTGGCTCATACCCCCAAAGGACACTTTCAGCGACA

|+231      |+241      |+251      |+261      |+271      |+281
GCTATGGACAGCATGGTACCAAGGAGTTAAGTTGAGGCTTTTTCCAGCTTTCTCTGGTTC

|+291      |+301      |+311      |+321      |+331      |+341
ATTTGATTGCTTGATAAGGCCTCAGGATCTCAGCATTGCACAATGCCTCATGGAAGCCTT

|+351      |+361      |+371      |+381      |+391      |+401
TGAGGGTATCACACAGACACCCCCACCTTCCTCCAGCCTGTGCGCACCTGCCCTCCTTGC

|+411      |+421      |+431      |+441      |+451      |+461
AGCCCAGCACACCTGCAGGTGTAAGGGACGATTGGAGTTTCTTCCCAGAGAGTCTGTCCC

|+471      |+481      |+491      |+501      |+511      |+521
AGAAGGACTGTGGCTTGTGTGTGTCCATCTCGCCTGTTGGCTCAGTGCTTCATCCCATTT

|+531      |+541      |+551      |+561      |+571      |+581
GCAGAGCCTCAGACACGTCTTGGTGGTGAGGCTCAGTTACCCCTGGGCTTAGGCTGAGGC

|+591      |+601      |+611      |+621      |+631      |+641
GGGCCCTGTGCTGGGGGTGGTAGAAAGGATGCTGCTGAGGCAGCTGGAGGAGTGGGAGTA

|+651      |+661      |+671      |+681      |+691      |+701
GCTCAGAGGGGAGGGCTGTTGGATGTATGGGGAGCTGGCAGAGCAGGTGGCAGTCACTGG
```

```
|+711      |+721      |+731      |+741      |+751      |+761
GACAAGGAGGGACTTGCCTCTCTTCTCATTATTGTGTCCTTTGCTTTAGTGTCAGTCCTG

|+771      |+781      |+791      |+801      |+811      |+821
GACTTGTGCAGGCCTGTTTTGTGTAGATCTGTTTTGGAAGATGGCATGGTCTAGGTGGTT

|+831      |+841      |+851      |+861      |+871      |+881
GAAGGATGTAGTAGAAGGATGGATGGTGGAAGGTGGGGACGTTGGTGGCTGGCTGAGGTG

|+891      |+901      |+911      |+921      |+931      |+941
CATGGGCCCCACACAGGACAGCTGGAGAATGGGCCGTCCACTTGGCCTCGTTCTGCGAGG

|+951      |+961      |+971      |+981      |+991      |+1001
GGCTCATGGGTCTGAGAGCCCCCACCCACTAGGCTTGATTGCATCCCTGTTGTGCCCTTT

|+1011     |+1021     |+1031     |+1041     |+1051     |+1061
AAGAGACATGTTTCCACCCCACCCCCAACCTTGTCCCAAGTGCCCTGGACTAAATTTCCT

|+1071     |+1081     |+1091     |+1101     |+1111     |+1121
GTGCCAGTGACTGCAGTTGGCCAAGGGACAATGTGGAAAACCCAGTGTCCATCTTTCCAC

|+1131     |+1141     |+1151     |+1161     |+1171     |+1181
CCTCCCTGATCTCCAGAACCTTCGACTGACCCCCTTGTCTTTATGCTGATGTTGAGTTTT

|+1191     |+1201     |+1211     |+1221     |+1231     |+1241
GGGATTGTTACTGGTTGAAGTGGGGGCAGATGCCTGTCACCAAGGTGTTGACTGTGTGAG

|+1251     |+1261     |+1271     |+1281     |+1291     |+1301
AAAAGCAGTTTGGGTGACAAATCCTGTGTGGCACAAGTTGGATCGCTTCCTAGAAATAAG

|+1311     |+1321     |+1331     |+1341     |+1351     |+1361
CAACACCTCTCCCAAAAAGCAGCCCACAAGGCAGGGGCCCAGCAGCCCAGCCATCACTCA

|+1371     |+1381     |+1391     |+1401     |+1411     |+1421
TCTTTGAGGAAATGAGTTGGTAGCCTCTGTGCACTGTTTGGTGGCCACATCACAGGTGAT

|+1431     |+1441     |+1451     |+1461     |+1471     |+1481
GTCCTGTTCACATACCTGCTTGTATTTAAAGCCCTCAGTCTGTCCTGTTGTGTGGGGCGA

|+1491     |+1501     |+1511     |+1521     |+1531     |+1541
AGTGATGGACTCTGCCAGGTGGACATGCTGTGGGTGGATGTTCCCGGCGTGTGCCGGGCC

|+1551     |+1561     |+1571     |+1581     |+1591     |+1601
TGAATGGACAGGGGCCACTTCACAGCATGTCAGGGAAAATCACTGTCACACAATTCCAAT

|+1611     |+1621     |+1631     |+1641     |+1651     |+1661
```

```
GGATTTTGTGCTCTTTTTGAAAAAAAAAAATTCTTTAGCGTAAACATGAATTTTTTTTCA

|+1671     |+1681     |+1691     |+1701     |+1711     |+1721
ATGTAGCCCCTGGGGAATGAATGAAATTTTGAGCTTCTTCAATACGTAAAATTAAATTTA

|+1731     |+1741     |+1751     |+1761     |+1771     |+1781
TACCACTGAGGGAGAGACCCTTTCTGAAAGAAGTATGGCCAAAAGCACTTTAATGCTGCT

|+1791     |+1801     |+1811     |+1821     |+1831     |+1841
GACATTGTTGTTTTTATGTTCATTTGCTGGAGCGCAAGACGTGCTGACACAGTGAGTTTT

|+1851     |+1861     |+1871     |+1881     |+1891     |+1901
CTCTGATGTATTTAAGGTGATGTATTTGCTTGAGTTACTCCTGTATCATTGCTCATAATA

|+1911     |+1921     |+1931     |+1941          .    .    .    .
TTGGAAACTAAAATAAAACCTAGTTGGAAATCCTTTGTGAgatctgtcttttgggttct

    .    .    .    .    .    .    .    .    .    .    .    .
tgtacaaactcctctttgacatggccagctgtattctgaagtgaccataactttggggaa

    .    .    .    .    .    .    .    .    .    .    .    .
gttcccactataatctggctccttattcttggaaggaatttgatactctcaaaagaacag

    .    .    .    .    .    .    .    .    .    .    .    .
atggtttaactgatctttaaggatcaggaaatcgagactgatttctttacagatttctct

    .    .    .    .    .    .    .    .    .    .    .    .
gtaactccagaccatttttcacttaaaaagtaaatgactcactgttccatcctgctttgc

    .    .    .    .    .    .    .    .
cttctgagaatttggttgccactattctttttttttttt
```