Gene: ATP1A2 - Sequence: NG_008014.1
Date : January 8, 2015

Exon 1 | Start: 1 | End: 116 | Length: 115

tctgagtcaactgctcccccttcagccagatccaagggggcatatcccccccaacctgggac

ccaggcccccttcccttgcagcctctctcagttgtgagtgccacaggccagaggggggttg

agaggagccaaggggggggcatgccgtgggacaaacgggctgtctagggccagtggctaaa

ggggcgggaggggaggagtcctcagggatcctgtttcaacaaacgtttctttcggaggag

gggaaggcggggggagaggggggagaaggacctatttaaagctaccctgttgctttggcttt

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   |-99       |-89       |-79       |-69       |-59       |-49
TCTCTGTCTGCCAGGGTCTCCGACTGTCCCAGACGGGCTGGTGTGGGCTTGGGATCCTCC

   |-39       |-29       |-19       |-9        |1        |11
TGGTGACCTCTCCCGCTAAGGTCCCTCAGCCACTCTGCCCCAAGATGGGCCGTGGGgtga
                                                  M   G   R   G
                                                  |1
```

gtatccctaaagagcaggggtcgcagtctagagggtgagggaggctgctgaggaaggatg

aagtgggaatgggatgtggaaggagcgggagagaggagctgagtgggatacttggaactt

gaaactaacagtctccaaactaccaatgtgtgtacagatcccacggcggtcacataccct

agtgctctcctctcctctgcacgccccagcccctgcccacagttagacccacagcccac

cacacatgcccctccatctctccctccacccactcccacatctctagtccttcc

Exon 2 | Start: 117 | End: 221 | Length: 104

agggtcctttcaacaaacaaaatcttagcagaagcccaagcattaaaccactcaagtggt

gcttttcagtcctgagcccctcacccttctctgaaactcacatgggagcccctggttctg

ccaatagtctacaaactgagggcctagggtccctcaccctccatcccccctatctcccccc

```
aaggcagccgctgctttgaacacacacccccactgcctgggctccctggctgagtggtg

ggaatggaggccccagcccctctcttccctgactctctggctctcccttcctccctcagg

        |21         |31        |41        |51        |61        |71
GCTGGCCGTGAGTACTCACCTGCCGCCACCACGGCAGAGAATGGGGGCGGCAAGAAGAAA
A   G   R   E   Y   S   P   A   A   T   T   A   E   N   G   G   G   K   K   K
                    |11                                   |21

        |81         |91        |101       |111
CAGAAGGAGAAGGAACTGGATGAGCTGAAGAAGGAGGTGGCAATGgtgagggaactgctg
Q   K   E   K   E   L   D   E   L   K   K   E   V   A   M
                    |31

ggccatggaggaggggccccatgctgggagagctgtccctgcagcccattgcactcagag

aaactccgtgtcccccatgctgctcaactcacccctgtgccctgcagtaccctcatatgc

atcttagatacctcctcccccaaagtaactcaccctcccttccccaggatgaccacaagct

gtccttggatgagctgggccgcaaataccaagtggacctgtccaaggtgagtggaggggc

ttctagggaaggaacaaaagaggcaagaaaaccatgcagcatcaa




Exon 3 | Start: 222 | End: 281 | Length: 59


cttcctccctcaggctggccgtgagtactcacctgccgccaccacggcagagaatgggggg

cggcaagaagaaacagaaggagaaggaactggatgagctgaagaaggaggtggcaatggt

gagggaactgctgggccatggaggaggggccccatgctgggagagctgtccctgcagccc

attgcactcagagaaactccgtgtcccccatgctgctcaactcacccctgtgccctgcag

taccctcatatgcatcttagatacctcctcccccaaagtaactcaccctcccttccccagg

    |121        |131       |141       |151       |161       |171
GATGACCACAAGCTGTCCTTGGATGAGCTGGGCCGCAAATACCAAGTGGACCTGTCCAAG
D   D   H   K   L   S   L   D   E   L   G   R   K   Y   Q   V   D   L   S   K
    |41                                   |51

gtgagtggaggggcttctagggaaggaacaaaagaggcaagaaaaccatgcagcatcaag
```

gtggcaggagcccttaaaactgtaatccagccttcttttacagatgaggaaactgaggccca

gaaacaaggactggcccaaggacatgcagctagttggtggcacagccagaactagaattt

ggatcccctgcatcctagcccaaagctctctccctgtataccctagaagccaggactccc

tatgacccaggccccagagggcctccaggcagggcccttccctataccccaagcaacttc

Exon 4 | Start: 282 | End: 485 | Length: 203

gagcttatccagactgcctccaggggagatgttatggccctaaccataggtgttgtctca

atccaatataattaggggtcaagcccagtcaaacccttctcagccctcaagccctccaag

ttgcatcacaaatgccacctcctccatgtggtctctcctgatggtcccccaccccttcca

accaggtgggactttccttctgggcattcttcccatgcccgggagctgaagggatgggca

tggtgactggctgggttggctccggatgcgtgcccctacgcctctccttgctccctcagg
```
   |181      |191      |201      |211      |221      |231
GGCCTCACCAACCAGCGGGCTCAGGACGTTCTGGCTCGAGATGGGCCCAACGCCCTCACA
G   L   T   N   Q   R   A   Q   D   V   L   A   R   D   G   P   N   A   L   T
   |61                                 |71

   |241      |251      |261      |271      |281      |291
CCACCTCCCACAACCCCTGAGTGGGTCAAGTTCTGCCGTCAGCTTTTCGGGGGGTTCTCC
P   P   P   T   T   P   E   W   V   K   F   C   R   Q   L   F   G   G   F   S
   |81                                 |91

   |301      |311      |321      |331      |341      |351
ATCCTGCTGTGGATTGGGGCTATCCTCTGCTTCCTGGCCTACGGCATCCAGGCTGCCATG
I   L   L   W   I   G   A   I   L   C   F   L   A   Y   G   I   Q   A   A   M
   |101                                |111

   |361      |371      |381
GAGGATGAACCATCCAACGACAATgtgagcccacacgcccgacccgggaacagcccgtga
E   D   E   P   S   N   D   N
   |121
```

ctgtcctccaaccctgaacccccaacacagtgggggtgggcagggaacaaggccctcac

ataacagtcctacagatgcccctgcatcttaggctggaaaggggagaggcttctatatat

atctgtaaagtactcctccgccaacagtgcatacacattcacatactcattaattaatga

aacaatctctccctgttcctccccgcttaagtgagcctgtctgtgtgcctgggtcttcat

cccctagcaaagtcctaaccctgg

Exon 5 | Start: 486 | End: 599 | Length: 113

cctgttcctccccgcttaagtgagcctgtctgtgtgcctgggtcttcatcccctagcaaa

gtcctaaccctgggaacttcctaagactttccctcccatttctagtcttaacaggcttga

ggttggcagatcaagggggaggttagtgagaagggctttcccctaccatcatcactctca

gtcacagacaaaggtctgggctgtcatcttggatggcactgcctgctcatcccaagtggc

agctgcccctttagggttggggggaaggtcaggtccctgaaactctttctccttaccagc
```
          |391       |401       |411       |421       |431       |441
CTATATCTGGGTGTGGTGCTGGCAGCTGTGGTCATTGTCACTGGCTGCTTCTCCTACTAC
L   Y   L   G   V   V   L   A   A   V   V   I   V   T   G   C   F   S   Y   Y
          |131                                 |141
```
```
          |451       |461       |471       |481       |491
CAGGAGGCCAAGAGCTCCAAGATCATGGATTCCTTCAAGAACATGGTACCTCAGgtaaga
Q   E   A   K   S   S   K   I   M   D   S   F   K   N   M   V   P   Q
          |151                                 |161
```

tggcagggctgggctctgggctaggctgtaaggttttggcaagagtccagctcatctttt

gtcagctcccaggctctaagatagagatggacagaaaagatcctccagcttttccatgcca

gcacctaattgtttatggggcttctccttctgcttgacggtgtgggagaccagcaggaga

agaaggcaggggcagagacaagcatttcatgagctgcctgtggctccccacagcaagccc

ttgtgatccgggagggagagaagatgcagatcaacgcagaggaagtggtggtgg

Exon 6 | Start: 600 | End: 734 | Length: 134

4

tactaccaggaggccaagagctccaagatcatggattccttcaagaacatggtacctcag

gtaagatggcagggctgggctctgggctaggctgtaaggtttttggcaagagtccagctca

tcttttgtcagctcccaggctctaagatagagatggacagaaaagatcctccagctttcc

atgccagcacctaattgtttatggggcttctccttctgcttgacggtgtgggagaccagc

aggagaagaaggcaggggcagagacaagcatttcatgagctgcctgtggctccccacagc

```
     |501        |511       |521       |531       |541       |551
CAAGCCCTTGTGATCCGGGAGGGAGAGAAGATGCAGATCAACGCAGAGGAAGTGGTGGTG
Q   A   L   V   I   R   E   G   E   K   M   Q   I   N   A   E   E   V   V   V
              |171                                 |181
```

```
     |561        |571       |581       |591       |601       |611
GGAGACCTGGTGGAGGTGAAGGGTGGAGACCGCGTCCCTGCTGACCTCCGGATCATCTCT
G   D   L   V   E   V   K   G   G   D   R   V   P   A   D   L   R   I   I   S
              |191                                 |201
```

```
     |621
TCTCATGGCTGTAAGgtgaggaggtcataccagagcaagcagttgagtctaaggagaagg
S   H   G   C   K
```

ctgtgtgcagagctgagaggggcccagtgaggtttaaaggtggagagacccaggtccaaa

tgtcaacaccatgcctatgcccctgctaaaccttctctcagtgtggggtgcttgtgcagt

gcctccttgcatctgtgtgttatgaatgctctatgccccaggtatttctttgttgtccac

tttttagcaatcatgtattgaataccaattatgtgtcagctgctttatatatgttcgatg

tgctatctgatgtaa

Exon 7 | Start: 735 | End: 852 | Length: 117

cccctgtggttgtgcaaggcagagattctgtttacattcaccattttacagttgagtac

atggaggctctcttggttaagcaagtaacccgaggtcacataagaagtcaggaggagtca

gaattccaaaccagggcaggggcaatagatgagtaatgccataaatatgtgatgagggca

```
agtgtgactttgttcctcgtgtcatgaagattgagtgtggttggaggtggttcaggagac

agctgtgtgcatacaagtggctctgccagtctgatgactatgcactccttcctcctcagg

|631      |641      |651      |661      |671      |681
GTGGATAACTCATCCTTAACAGGAGAGTCGGAGCCCCAGACCCGCTCCCCCGAGTTCACC
V  D  N  S  S  L  T  G  E  S  E  P  Q  T  R  S  P  E  F  T
|211                              |221

|691      |701      |711      |721      |731      |741
CATGAGAACCCCCTGGAGACCCGCAATATCTGTTTCTTCTCCACCAACTGTGTTGAAGgt
H  E  N  P  L  E  T  R  N  I  C  F  F  S  T  N  C  V  E  G
|231                              |241

gagaagccaggctgccccctgtaggaaagagtctgaatcctgaatccatagtcaggatga

agggctctggtagtacttacctggcaaaagctctgccattggtggggcaattgaggggtc

aggggggccctgaatattatggaaacaccctccacagagcagggtattgactgagggcagc

ctgactccatgggaaatgtatctcccttccccagggagatctctgttctgtccaccccaa

gactgagtggatttcaaagctttcaggtattgggttaagaaccccttacgcatgcgca


Exon 8 | Start: 853 | End: 1121 | Length: 268


aaaatgccacaggcaattttttatttattgaatcttgtctatttgaactttgagattatttt

gcaagcttctccccaggctcgagtacaagagaaaataatttgctgttgtattgattcaag

gattggcgatctatccagggaaaggaaggccaagtggggacaacctactgaatgtggcct

ccagatctgcggctttggctcacctatcctgtgatgattttccttgctcaggaaatagga

tgggactgcagtccctgggagccacaaggcacccaacctgatgccccaccatgttgcagg

  |751      |761      |771      |781      |791      |801
GCACTGCCAGGGGCATTGTGATTGCCACAGGAGACCGGACGGTGATGGGCCGCATAGCTA
   T  A  R  G  I  V  I  A  T  G  D  R  T  V  M  G  R  I  A  T
  |251                              |261

  |811      |821      |831      |841      |851      |861
```

```
CTCTCGCCTCAGGCCTGGAGGTTGGGCGGACACCCATAGCAATGGAGATTGAACACTTCA
  L   A   S   G   L   E   V   G   R   T   P   I   A   M   E   I   E   H   F   I
  |271                                     |281

  |871       |881       |891       |901       |911       |921
TCCAGCTGATCACAGGGGTCGCTGTATTCCTGGGGGTCTCCTTCTTCGTGCTCTCCCTCA
  Q   L   I   T   G   V   A   V   F   L   G   V   S   F   F   V   L   S   L   I
  |291                                     |301

  |931       |941       |951       |961       |971       |981
TCCTGGGCTACAGCTGGCTGGAGGCAGTCATCTTCCTCATCGGCATCATAGTGGCCAACG
  L   G   Y   S   W   L   E   A   V   I   F   L   I   G   I   I   V   A   N   V
  |311                                     |321

  |991       |1001      |1011
TGCCTGAGGGGCTTCTGGCCACTGTCACTgtgagtgggtcaggctgaggtgccaccaggg
  P   E   G   L   L   A   T   V   T
  |331
```

gagggtctcactactctttcctcagagtgatagaggcacagttgcttgtagcttctcact

acttttttcccccctagagtcacttattggatgcgatactcagagatcacttaatacatggc

ttagggtatgagttgagaaatctcaggtggggctattcttaggcactcagtttctcttttt

ggagcttgtcacggctgccttttctcacgatctgccagcagtctgggtctcattccgtcc

aagtctcctgtagaggctgtctcaaaggt

Exon 9 | Start: 1122 | End: 1320 | Length: 198

cagtttgcagtgtcccttctgtgttgatgactcagacatccctatgctcagctctgctct

ggccctctctggagctctagtcaaacgtcttaaacccccctaatgggcatttcatcttaac

agatactcatgatctcaacacatctaaaattgaacattcattatttacagctaagtccca

cccattcaagttagtggagtagaatcaggggaggaggaatggagccacggtctagggtaa

ggttatggccatctccggcttcagccttaacctttttttattctcctctttctctaccagg

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  |1021      |1031      |1041      |1051      |1061      |1071
GTGTGCCTGACCCTGACAGCCAAGCGCATGGCACGGAAGAACTGCCTGGTGAAGAACCTG
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V   C   L   T   L   T   A   K   R   M   A   R   K   N   C   L   V   K   N   L
    |341                                             |351

    |1081       |1091       |1101       |1111       |1121       |1131
GAGGCGGTGGAGACGCTGGGCTCCACGTCCACCATCTGCTCGGACAAGACGGGCACCCTC
E   A   V   E   T   L   G   S   T   S   T   I   C   S   D   K   T   G   T   L
    |361                                             |371

    |1141       |1151       |1161       |1171       |1181       |1191
ACCCAGAACCGCATGACCGTCGCCCACATGTGGTTCGACAACCAAATCCATGAGGCTGAC
T   Q   N   R   M   T   V   A   H   M   W   F   D   N   Q   I   H   E   A   D
    |381                                             |391

    |1201       |1211
ACCACCGAAGATCAGTCTGgtgattgggtgctccagagggggtggataggattagaggag
T   T   E   D   Q   S   G
    |401
```

gctgagggcagtggcgtggtggggtgagtggttgagataaaggctctaaagggagccacg

ctcctggttccccctcatttcctcccagggggccacttttgacaaacgatcccctacgtgg

acggccctgtctcgaattgctggtctctgcaaccgcgccgtcttcaaggcaggacaggag

aacatctccgtgtctaaggtaggggggtcaggacacacaccaggtatgttttgggggtgtc

tccaaagcctcttgctggc

Exon 10 | Start: 1321 | End: 1430 | Length: 109

ggcacggaagaactgcctggtgaagaacctggaggcggtggagacgctgggctccacgtc

caccatctgctcggacaagacgggcaccctcacccagaaccgcatgaccgtcgcccacat

gtggttcgacaaccaaatccatgaggctgacaccaccgaagatcagtctggtgattgggt

gctccagagggggtggataggattagaggaggctgagggcagtggcgtggtggggtgagt

ggttgagataaaggctctaaagggagccacgctcctggttccccctcatttcctcccagg

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    |1221       |1231       |1241       |1251       |1261       |1271
GGGCCACTTTTGACAAACGATCCCCTACGTGGACGGCCCTGTCTCGAATTGCTGGTCTCT
    A   T   F   D   K   R   S   P   T   W   T   A   L   S   R   I   A   G   L   C
```

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                       |411                             |421

        |1281       |1291       |1301       |1311       |1321
GCAACCGCGCCGTCTTCAAGGCAGGACAGGAGAACATCTCCGTGTCTAAGgtaggggggtc
  N   R   A   V   F   K   A   G   Q   E   N   I   S   V   S   K
                       |431                             |441

aggacacacaccaggtatgttttggggggtgtctccaaagcctcttgctggccccagcttt

ccttctcacatgatgtggctgccttggggggtttcagtgccgccttcacctgatcctccac

tcccttccctcccatgctgacactgaattcttgtctcttctggcagcgggacacagctgg

tgatgcctctgagtcagctctgctcaagtgcattgagctctcctgtggctcagtgaggaa

aatgagagacagaaaccccaaggtggcagagattcctttcaactctacca



Exon 11 | Start: 1431 | End: 1565 | Length: 134


catttcctcccaggggccacttttgacaaacgatcccctacgtggacggccctgtctcga

attgctggtctctgcaaccgcgccgtcttcaaggcaggacaggagaacatctccgtgtct

aaggtaggggggtcaggacacacaccaggtatgttttggggggtgtctccaaagcctcttgc

tggccccagctttccttctcacatgatgtggctgccttggggggtttcagtgccgccttca

cctgatcctccactcccttccctcccatgctgacactgaattcttgtctcttctggcagc

    |1331       |1341       |1351       |1361       |1371       |1381
CGGGACACAGCTGGTGATGCCTCTGAGTCAGCTCTGCTCAAGTGCATTGAGCTCTCCTGT
 R   D   T   A   G   D   A   S   E   S   A   L   L   K   C   I   E   L   S   C
                       |451                             |461

    |1391       |1401       |1411       |1421       |1431       |1441
GGCTCAGTGAGGAAAATGAGAGACAGAAACCCCAAGGTGGCAGAGATTCCTTTCAACTCT
 G   S   V   R   K   M   R   D   R   N   P   K   V   A   E   I   P   F   N   S
                       |471                             |481

    |1451       |1461
ACCAACAAGTACCAGgtctgcttgggttgccaggacagaggaagagagagggatataaat
 T   N   K   Y   Q
```

9

gggtgagggtggacaaagccaaggggaatcatcactagcaggagtgggggtgtctgaggg

tcatgttccctcccctgctaagtcccccaggacagctcatatgactgcatgtctgattg

caactagccccagctcccaaaccttactccatcccttactacaatctgtcactctctcaa

ctcttcttcccatagctccgcatcctctggcctagccttccaactcttctaccccagtca

gtgaaaccataattc

Exon 12 | Start: 1566 | End: 1755 | Length: 189

ccaggtggtggtggggatgctgaggagggagccgttcagcccctagcacagtgcctgtct

taacctgacctcaataaatatttgttgaatgaaagactgtcctacggaggtggctctcag

gttacaagtgttggaactgtgaggtctaaacacccccctgcacaaggagattctctttgt

tgacaatctttgatgggttggggctactttctaaggtggtttccttaccagctgctgct

ctatgccgcgctaccaagacaagtatggccctctctgtaactacctgttgtctctccagc

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        |1471      |1481      |1491      |1501      |1511      |1521
CTGTCTATCCACGAGCGAGAAGACAGCCCCCAGAGCCACGTGCTGGTGATGAAGGGGGCC
L   S   I   H   E   R   E   D   S   P   Q   S   H   V   L   V   M   K   G   A
        |491                               |501

        |1531      |1541      |1551      |1561      |1571      |1581
CCAGAGCGCATTCTGGACCGGTGCTCCACCATCCTGGTGCAGGGCAAGGAGATCCCGCTC
P   E   R   I   L   D   R   C   S   T   I   L   V   Q   G   K   E   I   P   L
        |511                               |521

        |1591      |1601      |1611      |1621      |1631      |1641
GACAAGGAGATGCAAGATGCCTTTCAAAATGCCTACATGGAGCTGGGGGGGACTTGGGGAG
D   K   E   M   Q   D   A   F   Q   N   A   Y   M   E   L   G   G   L   G   E
        |531                               |541

        |1651
CGTGTGCTGGgtgagaggccagaaacaggaggctcagaaggggattcccaagcctctgcg
R   V   L   G
        |551
```

gcatccctggggtgggggactgtgggggcgtccaggaagccactctgcggatctcactga

tcccttctgcccccctttaggattctgtcaactgaatctgccatctggaaagtttcctcg

gggcttcaaattcgacacggatgagctgaactttcccacggagaagctttgctttgtggg

gctcatgtctatgattgaccctccccgggctgctgtgccagatgctgtgggcaagtgccg

aagcgcaggc

Exon 13 | Start: 1756 | End: 1931 | Length: 175

gacagcccccagagccacgtgctggtgatgaagggggcccccagagcgcattctggaccgg

tgctccaccatcctggtgcagggcaaggagatcccgctcgacaaggagatgcaagatgcc

tttcaaaatgcctacatggagctggggggacttgggga gcgtgtgctgggtgagaggcca

gaaacaggaggctcagaagggg attcccaagcctctgcggcatccctggggtgggggact

gtggggggcgtccaggaagccactctgcggatctcactgatcccttctgccccccttta gg

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          |1661      |1671      |1681      |1691      |1701      |1711
GATTCTGTCAACTGAATCTGCCATCTGGAAAGTTTCCTCGGGGCTTCAAATTCGACACGG
  F   C   Q   L   N   L   P   S   G   K   F   P   R   G   F   K   F   D   T   D
                                       |561                           |571

          |1721      |1731      |1741      |1751      |1761      |1771
ATGAGCTGAACTTTCCCACGGAGAAGCTTTGCTTTGTGGGGCTCATGTCTATGATTGACC
  E   L   N   F   P   T   E   K   L   C   F   V   G   L   M   S   M   I   D   P
                                       |581                           |591

          |1781      |1791      |1801      |1811      |1821
CTCCCCGGGCTGCTGTGCCAGATGCTGTGGGCAAGTGCCGAAGCGCAGGCATCAAGgtac
  P   R   A   A   V   P   D   A   V   G   K   C   R   S   A   G   I   K
                                       |601
```

tggcctcccatcctcccctccattctagcctcccccatgccagagttcaaggagctgcag

tggctgctgccctggaaaggcccaggccacggtggcctccttcccactgactcagagaag

aagctgtccatctgcaaggaaaggcccacccctgccttggggcactcacccttatccctt

ttgctcagagaggccagtgtcccatgcccctcctctccctccctggcacagctctttgtc

ccatctgcatgtgtacccttccattctgatttgaagcataatctggcactcctatc

Exon 14 | Start: 1932 | End: 2068 | Length: 136

tctcacacacacacacaatccccaccccctcacacacacacaatccccacccacacacac

acacacacatcctacacacacatacacacacccccacacacacacacatacacacacacac

atacaccccaccccagccactcccctgcccacagacgcacacacacatgcccttatttcg

gttgggatctgccatccccagacatctcgctatctagctttctcttactttgggagagga

acaggaggggggataaacccttaatactactttcctgttgtctcctctccttcccactagg

```
   |1831     |1841      |1851     |1861     |1871     |1881
GTGATCATGGTAACCGGGGATCACCCTATCACAGCCAAGGCCATTGCCAAAGGCGTGGGC
V  I  M  V  T  G  D  H  P  I  T  A  K  A  I  A  K  G  V  G
   |611                               |621

   |1891     |1901      |1911     |1921     |1931     |1941
ATCATATCAGAGGGTAACGAGACTGTGGAGGACATTGCAGCCCGGCTCAACATTCCCATG
I  I  S  E  G  N  E  T  V  E  D  I  A  A  R  L  N  I  P  M
   |631                               |641

   |1951     |1961
AGTCAAGTCAACCCCAGgtgaggcctctgcaggaagcccctgtgccctaatcaacacgtc
S  Q  V  N  P  R
   |651
```

ctcttgcacagaaggcttgggtgtcccctgggagtatttggatagcatttctgggacctt

tataggccttacctctgacactattgtgactggttcctcagccctgagcttgtatccagg

ctgtgccactgaatacccatgtaaccttggagatgtcacattcccttcctgagcctccat

tttctcaccacaaaattaggatgccatctccactgctgtaggagtgggatgtgagtaaag

aaactagcccagggcct

Exon 15 | Start: 2069 | End: 2219 | Length: 150

tctcaccacaaaattaggatgccatctccactgctgtaggagtgggatgtgagtaaagaa

actagcccagggcctagcaaactgcacttacaactgcgatgatcccatggtgaggattta

gactcacattctcaaagagaaatgggggaagtgagtactgaggagaggagaactgaagca

acaggggaagcaggctcagcagggagcctgcaggctgcggtggtgaagagaggcaggggg

caggaggggctggtacaggtgccaggggtcagctgtctctgtccccacccaccctccaga

```
      |1971      |1981      |1991      |2001      |2011      |2021
AGAAGCCAAGGCATGCGTGGTGCACGGCTCTGACCTGAAGGACATGACATCGGAGCAGCT
  E   A   K   A   C   V   V   H   G   S   D   L   K   D   M   T   S   E   Q   L
              |661                             |671

      |2031      |2041      |2051      |2061      |2071      |2081
CGATGAGATCCTCAAGAACCACACAGAGATCGTCTTTGCTCGAACGTCTCCCCAGCAGAA
  D   E   I   L   K   N   H   T   E   I   V   F   A   R   T   S   P   Q   Q   K
              |681                             |691

      |2091      |2101      |2111
GCTCATCATTGTGGAGGGATGTCAGAGGCAGgtgagcacagccacgggaggcagatgaca
  L   I   I   V   E   G   C   Q   R   Q
              |701
```

ggcagggaccggggaggcagggacagggccaagacaagcatggagtgagaggcgaggagc

caggcttgggaaggggtttcgtcctcaagtgtggccgtcttccctccagggagccattgt

ggccgtgacgggtgacggggtgaacgactcccctgcattgaagaaggctgacattggcat

tgccatgggcatctctggctctgacgtctctaagcaggcagccgacatgatcctgctgga

tgacaactttgcctccatcgtcacgggggtg

Exon 16 | Start: 2220 | End: 2388 | Length: 168

caccctccagagaagccaaggcatgcgtggtgcacggctctgacctgaaggacatgacat

cggagcagctcgatgagatcctcaagaaccacacagagatcgtctttgctcgaacgtctc

cccagcagaagctcatcattgtggagggatgtcagaggcaggtgagcacagccacgggag

gcagatgacaggcagggaccggggaggcagggacagggccaagacaagcatggagtgaga

ggcgaggagccaggcttgggaaggggtttcgtcctcaagtgtggccgtcttccctccagg

```
       |2121      |2131      |2141      |2151      |2161      |2171
GGAGCCATTGTGGCCGTGACGGGTGACGGGGTGAACGACTCCCCTGCATTGAAGAAGGCT
G   A   I   V   A   V   T   G   D   G   V   N   D   S   P   A   L   K   K   A
       |711                                        |721

       |2181      |2191      |2201      |2211      |2221      |2231
GACATTGGCATTGCCATGGGCATCTCTGGCTCTGACGTCTCTAAGCAGGCAGCCGACATG
D   I   G   I   A   M   G   I   S   G   S   D   V   S   K   Q   A   A   D   M
       |731                                        |741

       |2241      |2251      |2261      |2271      |2281
ATCCTGCTGGATGACAACTTTGCCTCCATCGTCACGGGGGTGGAGGAGGgtgaggaggct
I   L   L   D   D   N   F   A   S   I   V   T   G   V   E   E   G
       |751                                        |761
```

gcatgggttgggatggtttgcaggatactgaagccggcacctctgttccctgtccctttа

ccccagttgaagaatcattccacaactctaggcagcccagcccactttagcttcccttga

acacaaaatcttcctctcttgggaagacaggcagccatgcttcaggggctgggggtgggg

aagagtccctctgacctccctgatgccctcagaatctccccacaggccgcctgatctttg

acaacttgaagaaatccatcgcctacaccctgaccagcaacatccccga

Exon 17 | Start: 2389 | End: 2543 | Length: 154

aggcagccgacatgatcctgctggatgacaactttgcctccatcgtcacggggggtggagg

agggtgaggaggctgcatgggttgggatggtttgcaggatactgaagccggcacctctgt

tccctgtccctttaccccagttgaagaatcattccacaactctaggcagcccagcccact

ttagcttcccttgaacacaaaatcttcctctcttgggaagacaggcagccatgcttcagg

ggctggggggtggggaagagtccctctgacctccctgatgccctcagaatctccccacagg

14

```
         |2291      |2301      |2311      |2321      |2331      |2341
GCCGCCTGATCTTTGACAACTTGAAGAAATCCATCGCCTACACCCTGACCAGCAACATCC
  R   L   I   F   D   N   L   K   K   S   I   A   Y   T   L   T   S   N   I   P
                            |771                                     |781

         |2351      |2361      |2371      |2381      |2391      |2401
CCGAGATCACCCCCTTCCTGCTGTTCATCATTGCCAACATCCCCCTACCTCTGGGCACTG
  E   I   T   P   F   L   L   F   I   I   A   N   I   P   L   P   L   G   T   V
                            |791                                     |801

         |2411      |2421      |2431
TGACCATCCTTTGCATTGACCTGGGCACAGATATGgtgagcgcaggaggtggaggagggg
  T   I   L   C   I   D   L   G   T   D   M
                            |811
```

acaggcaaggcaatcgtgatggcacagtggcagggaggagaggtgcactggggcagtggc

cccagctgtgggggttacaggagacaggcacaggcctggaagacaatggggtctgaatac

acgctttttttaactgtgtcaacgatcgtcactgtcgaagatcaattgcttctgtcatctc

ctacgtcccttcaaatgccctccctgccccatttcctaccccacacaggtccctgccatc

tccttggcctatgaggcagctgagagtgatatcat

Exon 18 | Start: 2544 | End: 2667 | Length: 123

tctgggcactgtgaccatcctttgcattgacctgggcacagatatggtgagcgcaggagg

tggaggaggggacaggcaaggcaatcgtgatggcacagtggcagggaggagaggtgcact

ggggcagtggcccccagctgtgggggttacaggagacaggcacaggcctggaagacaatgg

ggtctgaatacacgctttttttaactgtgtcaacgatcgtcactgtcgaagatcaattgct

tctgtcatctcctacgtcccttcaaatgccctccctgccccatttcctaccccacacagg

```
 |2441      |2451      |2461      |2471      |2481      |2491
GTCCCTGCCATCTCCTTGGCCTATGAGGCAGCTGAGAGTGATATCATGAAGCGGCAGCCA
  V   P   A   I   S   L   A   Y   E   A   A   E   S   D   I   M   K   R   Q   P
                      |821                                     |831
```

```
    |2501      |2511      |2521      |2531      |2541      |2551
CGAAACTCCCAGACGGACAAGCTGGTGAATGAGAGGCTCATCAGCATGGCCTACGGACAG
R   N   S   Q   T   D   K   L   V   N   E   R   L   I   S   M   A   Y   G   Q
                        |841                             |851

  |2561
ATCGgtgcgccaagccccgggcctcgggagggaaccccaacagggttcttttcccagctt
I   G
```

tcagaggaatgagccccaagcaaaattccaggacagaggccagctacccaagggtcaggg

acctccatctctggccctgaggggctgtgccccttctgcttcctgctctgaccctgcccc

tgcctttggccctctacccacagggatgatccaggcactgggtggcttcttcacctactt

tgtgatcctggcagagaacggtttcctgccatcacggctactgggaatccgcctcgactg

ggat

Exon 19 | Start: 2668 | End: 2813 | Length: 145

gaggcagctgagagtgatatcatgaagcggcagccacgaaactcccagacggacaagctg

gtgaatgagaggctcatcagcatggcctacggacagatcggtgcgccaagccccgggcct

cgggagggaaccccaacagggttcttttcccagctttcagaggaatgagccccaagcaaa

attccaggacagaggccagctacccaagggtcagggacctccatctctggccctgagggg

ctgtgccccttctgcttcctgctctgaccctgcccctgcctttggccctctacccacagg

```
      |2571      |2581      |2591      |2601      |2611      |2621
GGATGATCCAGGCACTGGGTGGCTTCTTCACCTACTTTGTGATCCTGGCAGAGAACGGTT
  M   I   Q   A   L   G   G   F   F   T   Y   F   V   I   L   A   E   N   G   F
                |861                             |871

      |2631      |2641      |2651      |2661      |2671      |2681
TCCTGCCATCACGGCTACTGGGAATCCGCCTCGACTGGGATGACCGGACCATGAATGATC
  L   P   S   R   L   L   G   I   R   L   D   W   D   D   R   T   M   N   D   L
                |881                             |891

      |2691      |2701
```

16

```
TGGAGGACAGCTATGGACAGGAGTGGgtgagtggtgctgtgtaaacacagcgcacatgtg
  E   D   S   Y   G   Q   E   W
                       |901
```

```
tgaaggtacgggaagctgaatgcctggcaggagtggccagtggtggccaactgggactgg

ggctaggggtggatcaggagaaaccatgctaccttctggtcctaccctttcctccgacac

tctcatctgtctctgcccaccctccctccagacctatgagcagcggaaggtggtggagtt

cacgtgccacacggcattctttgccagcatcgtggtggtgcagtgggctgacctcatcat

ctgcaagacccgccgcaactcagtct
```

Exon 20 | Start: 2814 | End: 2944 | Length: 130

```
tactttgtgatcctggcagagaacggtttcctgccatcacggctactgggaatccgcctc

gactgggatgaccggaccatgaatgatctggaggacagctatggacaggagtgggtgagt

ggtgctgtgtaaacacagcgcacatgtgtgaaggtacgggaagctgaatgcctggcagga

gtggccagtggtggccaactgggactggggctaggggtggatcaggagaaaccatgctac

cttctggtcctaccctttcctccgacactctcatctgtctctgcccaccctccctccaga
```

```
 |2711      |2721      |2731      |2741      |2751      |2761
ACCTATGAGCAGCGGAAGGTGGTGGAGTTCACGTGCCACACGGCATTCTTTGCCAGCATC
 T   Y   E   Q   R   K   V   V   E   F   T   C   H   T   A   F   F   A   S   I
                       |911                           |921
```

```
 |2771      |2781      |2791      |2801      |2811      |2821
GTGGTGGTGCAGTGGGCTGACCTCATCATCTGCAAGACCCGCCGCAACTCAGTCTTCCAG
 V   V   V   Q   W   A   D   L   I   I   C   K   T   R   R   N   S   V   F   Q
                       |931                           |941
```

```
 |2831
CAGGGCATGAAgtgagtgcccacccccatggcacctacccacccaggctctgggcacact
 Q   G   M   K
```

```
caccaacccacacaggccaagcttccaactcagccctggaccagagctgtaaggagggca
```

tcagattttaatcttccatctgtatatccatagataggtttcatatagaagagagaagcc

atgcttcaggctcctaattttgcattttgttattgtctctctccacctttcttctctcct

tctctccctcccttctttcccccatctcctacttgagtgccacctgctcctatcctttgc

ccagccctaaa

Exon 21 | Start: 2945 | End: 3046 | Length: 101

aggccccatgttgaccaccgtgtctccagtacagaacacgtcacccaacacctagaaaca

attatttaatgaatgaatatacgtgcaatagacaacattcggacgtaaactcagtaagca

gaaaaacaaataacatcttcctttggttacataaagcatgagaagaggctgttggaagaa

gacatgcgactatgtcgtttagaattctctctcctctttcccttgcaccccaggggtatc

ccaggatctctgcctccatgatcccccttcacctgccacctcctttctttgcctttcagg

|2841 |2851 |2861 |2871 |2881 |2891
GAACAAGATCCTGATTTTTGGGCTCCTGGAGGAGACGGCGTTGGCTGCCTTTCTCTCTTA
 N   K   I   L   I   F   G   L   L   E   E   T   A   L   A   A   F   L   S   Y
          |951 |961

|2901 |2911 |2921 |2931 |2941
CTGCCCAGGCATGGGTGTAGCCCTCCGCATGTACCCGCTCAAgtgagtgtctctttcggg
 C   P   G   M   G   V   A   L   R   M   Y   P   L   K
          |971 |981

cggcctgagtagtcatacggggggccttcagcccccctccaggatccaagttctgatcgct

ttgaatgctcctttatgtgacagccaccaagccaacctctgatgctgctgacactctcct

ccattgctttcagagtcacctggtggttctgcgccttcccctacagcctcctcatcttca

tctatgatgaggtccgaaagctcatcctgcggcggtatcctggtggtaagcccctccaca

ttccccccagcaaagtgcaagccccaccaccagctcctccct

Exon 22 | Start: 3047 | End: 3138 | Length: 91

```
ctccatgatccccttcacctgccacctcctttctttgcctttcaggaacaagatcctga

ttttgggctcctggaggagacggcgttggctgcctttctctcttactgcccaggcatgg

gtgtagccctccgcatgtacccgctcaagtgagtgtctctttcgggcggcctgagtagtc

atacgggggccttcagcccctccaggatccaagttctgatcgctttgaatgctccttt

atgtgacagccaccaagccaacctctgatgctgctgacactctcctccattgctttcaga
```

```
         |2951      |2961      |2971      |2981      |2991      |3001
AGTCACCTGGTGGTTCTGCGCCTTCCCCTACAGCCTCCTCATCTTCATCTATGATGAGGT
  V   T   W   W   F   C   A   F   P   Y   S   L   L   I   F   I   Y   D   E   V
                                    |991                               |1001
```

```
         |3011      |3021      |3031
CCGAAAGCTCATCCTGCGGCGGTATCCTGGTGgtaagcccctccacattcccccagcaa
  R   K   L   I   L   R   R   Y   P   G   G
                                    |1011
```

```
agtgcaagcccaccaccagctcctccctccaggaccacacgcagactccactcccacta

ctggttcctgcttctgttcctcaacaccctcagatcctggggtcccaggtcccaggagcc

ctgactctttcgaacctgttgtctctgccctcttcccatcagattctaaaccccgcctaa

ctcacagttggtctccgaggccctccaccttccacctgaaaccacagaacatcagaatta

gaagggcctttccaggtcacctagtcccacgt
```

Exon 23 | Start: 3139 | End: 5436 | Length: 2297

```
tgggattgcaggcgcatgccactatgcccgactaattttttgtattttttagtacagacag

ggtttcactgggttagccaggagtcttgatctccgcctgcctcagcctcccagtatgctg

ggattacaggcatgagccactgcacccagcctccttccaccttcctaagccacttccccc

agtgcccttcaccaggcttctccttccacctggcttcagcgacccaagcccctaggaaat

tgatctcttgcctccttttaagctcatgctgcaatctccactcccaatctctctaacagg
```

```
      |3041      |3051      |+1       |+11       |+21       |+31
GCTGGGTGGAGAAGGAGACATACTACTGACCCCATTGGAAGAAGAACCAGGCATGGAAAG
  W   V   E   K   E   T   Y   Y   *
                                        |1021


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


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


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


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


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


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


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


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


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


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


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


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


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


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

```
TGTGCCACAGAGTTCCCCGCTGACCCTTGGTTAGGGGTCCTCTTAGTCCACAAGGTCCGG

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

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

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

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

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

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

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

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

        |+1361     |+1371     |+1381     |+1391     |+1401     |+1411
ACACGCCTGTAATCTCAGCTACTCAGGAGGCTGAGGCAGGAGAATTGCTTGAACCTGTGA

        |+1421     |+1431     |+1441     |+1451     |+1461     |+1471
GGAAGAGGTTGCAGTGAGCTGAGATCGTGCCATTACACTCCAGCCTGGGCGAAAGGGTGA

        |+1481     |+1491     |+1501     |+1511     |+1521     |+1531
GACTCCATCTCAAAAAAAAAAAAAAATGATTTGCTTTTGACGTCTTAGGTGGCAGGGCTGT

        |+1541     |+1551     |+1561     |+1571     |+1581     |+1591
TCCCTCCAGGCAAATGCCCTTCAAACCGACGATCATTGTGCCCACTTACCCTGGGCTGGA

        |+1601     |+1611     |+1621     |+1631     |+1641     |+1651
GAGTTGGTTTCAGGTTCCTACAGGAGATAGCTTTCTTTCCCTTACTCCCTATCTAACACT

        |+1661     |+1671     |+1681     |+1691     |+1701     |+1711
TTTGCTCTGCAGGCAGCCTTGCCCATTCTCTAAGCCTGGCTTAGAAGGCACTGGGAATGT

        |+1721     |+1731     |+1741     |+1751     |+1761     |+1771
CCTGTAGAGAGAGACCTAGATAGGTCATGCAAGTGAGAAAGACATCTGAGGAAAATGGAA
```

```
        |+1781     |+1791     |+1801     |+1811     |+1821     |+1831
GACCTAAGGCAGACAGGAAGGAAGCACAAAAGACAAGCATTGGGTCAGACCCATAAACCA

        |+1841     |+1851     |+1861     |+1871     |+1881     |+1891
CCTCCCAAAGGCTGTCATTTCATTGCACTGGAATTTTGCTTTATCAGAAGCAAGGAAGTA

        |+1901     |+1911     |+1921     |+1931     |+1941     |+1951
AGGGAGTCATTGCCTTGGGCCTGGGAATCTAAGTGGGAGACAATATTAATTTGGATCCGA

        |+1961     |+1971     |+1981     |+1991     |+2001     |+2011
TTAATTGGAGATTACTAACTGTGGACAAAAGTTTATCTTTGCACAATCAATAAAAATGGC

        |+2021     |+2031     |+2041     |+2051     |+2061     |+2071
ATTTTTTTAGTAAATTAAGAGCATAAACAATATTGCTAGAGGTGGCATGTTTAGTCTACC

        |+2081     |+2091     |+2101     |+2111     |+2121     |+2131
AAAAACAATACTTTTCAGGCACTTTAGAAATATCCTTTTAGAAGCAGCGAGTGCATGGGC

        |+2141     |+2151     |+2161     |+2171     |+2181     |+2191
TAATTATCATCAATCTTTATGTATTTGTTAAAGAAACATCTACAGGATCTTTATTGGTGA

        |+2201     |+2211     |+2221     |+2231     |+2241     |+2251
CCTTTTGTAAGACATTAGTTTGAGGTACTACCTATGTACTTGAAAATAATAAAGTGGCAT

        |+2261     |+2271
TTCTTTATGAAAAAAAAAAgaaatctcttccataattcagatttctacacttttatacttgc

ctccctcctaaatcgtgatattgaaatatgtgctgtggcagaactcggcttgtagggaaa

gcaacaaagagatagcaagtgtcagggatgggagggaaatggtctgggagcagatgatgt

ccgtggagaaagcaagaggggaagaagttaggttgcaaaataacctacaagaaactatag

caggagcctccttcctcatgctgatcccaccctaagagccacaagagtttgtccaggaca

gggaggggcctgtgagtc
```