Gene: EGFR - Sequence: NG_007726.3 Date : January 8, 2015

```
Exon 1 | Start: 1 | End: 334 | Length: 333
```

```
tcctcctcgcattctcctcctcctctgctcctcccgatccctcctccgccgcctggtccc
```

```
tcctcctcccgccctgcctccccgcgcctcggcccgcgcgagctagacgtccgggcagcc
```

```
      |-239      |-229      |-219      |-209      |-199      |-18-
CCCCGGCGCAGCGCGGCCGCAGCAGCCTCCGCCCCCCGCACGGTGTGAGCGCCCGACGCG
```

```
      |-179      |-169      |-159      |-149      |-139      |-12-
GCCGAGGCGGCCGGAGTCCCGAGCTAGCCCCGGCGGCCGCCGCCGCCCAGACCGGACGAC
```

```
      |-119      |-109      |-99       |-89       |-79       |-69
AGGCCACCTCGTCGGCGTCCGCCCGAGTCCCCGCCTCGCCGCCAACGCCACAACCACCGC
```

```
      |-59       |-49       |-39       |-29       |-19       |-9
GCACGGCCCCCTGACTCCGTCCAGTATTGATCGGGAGAGCCGGAGCGAGCTCTTCGGGGA
```

```
      |1         |11        |21        |31        |41        |51
GCAGCGATGCGACCCTCCGGGACGGCCGGGGCAGCGCTCCTGGCGCTGCTGGCTGCGCTC
      M  R  P  S  G  T  A  G  A  A  L  L  A  L  L  A  A  L
      |1                          |11
```

```
      |61       |71       |81
TGCCCGGCGAGTCGGGCTCTGGAGGAAAAGAAAGgtaagggcgtgtctcgccggctcccg
C  P  A  S  R  A  L  E  E  K  K  V
      |21

cgccgcccccggatcgcgccccggaccccgcagcccgcccaaccgcgcaccggcgcaccg


gctcggcgcccgcgcccccgcccgtcctttcctg
```

Exon 2 | Start: 335 | End: 486 | Length: 151

```
ctctgtgtggagagagtgaagaaactgctacccttaatacctggaccttgagggattgtt


ttattttagtttttctgcatttctcagtatttcatgtgatatctgtctttttcttccagt


  |91       |101      |111      |121      |131      |141
TTTGCCAAGGCACGAGTAACAAGCTCACGCAGTTGGGCACTTTTGAAGATCATTTTCTCA
  C  Q  G  T  S  N  K  L  T  Q  L  G  T  F  E  D  H  F  L  S
  |31                          |41

  |151      |161      |171      |181      |191      |201
GCCTCCAGAGGATGTTCAATAACTGTGAGGTGGTCCTTGGGAATTTGGAAATTACCTATG
  L  Q  R  M  F  N  N  C  E  V  V  L  G  N  L  E  I  T  Y  V
  |51                          |61
```

```
  |211       |221       |231
TGCAGAGGAATTATGATCTTTCCTTCTTAAAGgttggtgactttgattttcctacacaaa
  Q   R   N   Y   D   L   S   F   L   K
  |71
```

```
taaaattggagaaaatctaagtggagaaaggcctgggcagaattccacttgaagtgtgtt
```

```
tatttttgctatggcaatgacaagtcttacag
```

Exon 3 | Start: 487 | End: 670 | Length: 183

```
gagcactcgtgtgcattagggttcaactgggcgtcctagggctccctggacccattttag
```

```
accttgagttcttgagttcctcaaaagagaaatcacgcatttatgttttctcttcttaga
```

```
|241       |251       |261       |271       |281       |291
ACCATCCAGGAGGTGGCTGGTTATGTCCTCATTGCCCTCAACACAGTGGAGCGAATTCCT
T   I   Q   E   V   A   G   Y   V   L   I   A   L   N   T   V   E   R   I   P
|81                          |91

|301       |311       |321       |331       |341       |351
TTGGAAAACCTGCAGATCATCAGAGGAAATATGTACTACGAAAATTCCTATGCCTTAGCA
L   E   N   L   Q   I   I   R   G   N   M   Y   Y   E   N   S   Y   A   L   A
|101                         |111

|361       |371       |381       |391       |401       |411
```

```
GTCTTATCTAACTATGATGCAAATAAAACCGGACTGAAGGAGCTGCCCATGAGAAATTTA
V  L  S  N  Y  D  A  N  K  T  G  L  K  E  L  P  M  R  N  L
|121                        |131

|421
CAGGgtgagaggctgggatgccaaggctgggggttcataaatgcagacagcagttccgat
Q  E
|141


ggctcccagcgagcttgtcactcaattccacctcggagaaggcttttatttttacccagt



acac




 Exon 4 | Start: 671 | End: 805 | Length: 134




actcttgttcgcaccatggcatctctttagcagaacataaatgcgaagagcacatgcatc



cttcatgggaatttaaaggagctggaaagagtgctcaccgcagttccattctcccgcaga


      |431       |441       |451       |461       |471       |481
AAATCCTGCATGGCGCCGTGCGGTTCAGCAACAACCCTGCCCTGTGCAACGTGGAGAGCA
  I  L  H  G  A  V  R  F  S  N  N  P  A  L  C  N  V  E  S  I
                          |151                          |161

      |491       |501       |511       |521       |531       |541
TCCAGTGGCGGGACATAGTCAGCAGTGACTTTCTCAGCAACATGTCGATGGACTTCCAGA
```

```
  Q  W  R  D  I  V  S  S  D  F  L  S  N  M  S  M  D  F  Q  N
                        |171                        |181

     |551
ACCACCTGGGCAGCTgtaagtgtcgcatacacactatctctgcctccagctcctatgggg
  H  L  G  S  C
```

```
gacagctctacagcactggggcaggggagagaagccatgtttagtaagtcacattaatca
```

```
gaaacaaaaagtagt
```

Exon 5 | Start: 806 | End: 874 | Length: 68

```
agaataagttgaaaagattgtcttcatttattgaatgtgcttaactcaggcccgggaaag
```

```
ggcgtcatcagtttctcatcatttcactgagatatgcatctattacttttacatttcagg
```

```
 |561      |571      |581      |591      |601      |611
GCCAAAAGTGTGATCCAAGCTGTCCCAATGGGAGCTGCTGGGGTGCAGGAGAGGAGAACT
  Q  K  C  D  P  S  C  P  N  G  S  C  W  G  A  G  E  E  N  C
          |191                        |201

 |621
GCCAGAAACgtaagtcagtgaacagcctcagacccatgtgtgaccgcccctctcttcctt
  Q  K  L
```

```
cacttgcttaggtgattggatttgttttccctctgaagactccaaagagttactttatta



cagggtcag
```

Exon 6 | Start: 875 | End: 993 | Length: 118

```
gttggaagcaaatgtgtcttcacttttcatgaaaaagtctgcaagtgctctgcgacatc



cctgggaaatgatcctaccctcactcttcagctcacagggaacctttgctcttttcagt


  |631      |641      |651      |661      |671      |681
TGACCAAAATCATCTGTGCCCAGCAGTGCTCCGGGCGCTGCCGTGGCAAGTCCCCCAGTG
  T  K  I  I  C  A  Q  Q  C  S  G  R  C  R  G  K  S  P  S  D
  |211                        |221

  |691      |701      |711      |721      |731      |741
ACTGCTGCCACAACCAGTGTGCTGCAGGCTGCACAGGCCCCCGGGAGAGCGACTGCCTGg
  C  C  H  N  Q  C  A  A  G  C  T  G  P  R  E  S  D  C  L
  |231                        |241


taagatgcccctccagcagcctccctggagcaggctggggctgcacccgccccacccaca
```

```
ccaggacagaagacttcctgtgggggagctgtcaattagcatttgtcataacagacagg
```

Exon 7 | Start: 994 | End: 1135 | Length: 141

```
ggctgcaaagacagtaacttgggctttctgacgggagtcaacaccgtgctgcgcttcctc
```

```
cgtgtgtggcgctgagtgtacttacctcacttgcccagcgtgtcctctctcctccatagg
```

```
   |751      |761      |771      |781      |791      |801
GTCTGCCGCAAATTCCGAGACGAAGCCACGTGCAAGGACACCTGCCCCCCACTCATGCTC
V  C  R  K  F  R  D  E  A  T  C  K  D  T  C  P  P  L  M  L
   |251                        |261

   |811      |821      |831      |841      |851      |861
TACAACCCCACCACGTACCAGATGGATGTGAACCCCGAGGGCAAATACAGCTTTGGTGCC
Y  N  P  T  T  Y  Q  M  D  V  N  P  E  G  K  Y  S  F  G  A
   |271                        |281

   |871      |881
ACCTGCGTGAAGAAGTGTCCCCgtgagtcctcctctgtgggccctctaactggtcaggca
T  C  V  K  K  C  P  R
   |291
```

```
tccttgtcccgctctgtctcctgctgagccctggagtatcccatcttggagagtctttgg
```

```
gtggatgtgtttgccttgcttg
```

```
 Exon 8 | Start: 1136 | End: 1252 | Length: 116
```

```
ataaagccaaaggaggatggagcctttccatcacccctcaagaggacctggaccgcctgt
```

```
gtgaggcccgagcacctggtgccaccgtcatcaccttcctttcatgctctcttccccagg
```

```
 |891      |901      |911      |921      |931      |941
GTAATTATGTGGTGACAGATCACGGCTCGTGCGTCCGAGCCTGTGGGGCCGACAGCTATG
  N  Y  V  V  T  D  H  G  S  C  V  R  A  C  G  A  D  S  Y  E
          |301                        |311

 |951      |961      |971      |981      |991      |1001
AGATGGAGGAAGACGGCGTCCGCAAGTGTAAGAAGTGCGAAGGGCCTTGCCGCAAAGgta
  M  E  E  D  G  V  R  K  C  K  K  C  E  G  P  C  R  K  V
          |321                        |331
```

```
ggaagcccgccggtgtgcggacgaggcttgttctcggctgctgaggctgggctctcatgc
```

```
cacctccaaaggaacacatcttcctcttctcattaaaaaacaactatacatatcgtt
```

Exon 9 | Start: 1253 | End: 1379 | Length: 126

atgtggcagtggcggttccggtgaccggaattccttcctgcttccctctgcctgtggatc

cctagctattcttaatccaacaaatgtgaacggaatacacgtctctcttatctctgcagt

```
    |1011      |1021      |1031      |1041      |1051      |1061
TGTGTAACGGAATAGGTATTGGTGAATTTAAAGACTCACTCTCCATAAATGCTACGAATA
  C  N  G  I  G  I  G  E  F  K  D  S  L  S  I  N  A  T  N  I
             |341                          |351

    |1071      |1081      |1091      |1101      |1111      |1121
TTAAACACTTCAAAAACTGCACCTCCATCAGTGGCGATCTCCACATCCTGCCGGTGGCAT
  K  H  F  K  N  C  T  S  I  S  G  D  L  H  I  L  P  V  A  F
             |361                          |371

    |1131
TTAGGGGgtgagtcacaggttcagttgcttgtataaagaaaaacaaaatctgccttttta
  R  G
```

actggtagagattggtgatcaataatcaccctgttgtttgtttcagtgactccttcacac

atactcc

Exon 10 | Start: 1380 | End: 1453 | Length: 73

ctgccggtggcatttagggggtgagtcacaggttcagttgcttgtataaagaaaaacaaa

atctgccttttttaactggtagagattggtgatcaataatcaccctgttgtttgtttcagt

```
       |1141     |1151     |1161     |1171     |1181     |1111
TGACTCCTTCACACATACTCCTCCTCTGGATCCACAGGAACTGGATATTCTGAAAACCGT
 D  S  F  T  H  T  P  P  L  D  P  Q  E  L  D  I  L  K  T  V
       |381                          |391

       |1201
AAAGGAAATCACAGgtttgagctgaattatcacatgaatataaatgggaaatcagtgttt
 K  E  I  T  G
       |401
```

tagagagagaacttttcgacatatttcctgttcccttggaataaaaacatttcttctgaa

attttaccgttaat

Exon 11 | Start: 1454 | End: 1544 | Length: 90

```
tccaattttcccacttactgttcatataatacagagtccctgagagtctagagtaatgtc



tcatacaaaaaagaaactcctacgtggtgtgtgtctgaagtctttcatctgccttacagg



   |1211     |1221     |1231     |1241     |1251     |1261
GGTTTTTGCTGATTCAGGCTTGGCCTGAAAACAGGACGGACCTCCATGCCTTTGAGAACC
  F  L  L  I  Q  A  W  P  E  N  R  T  D  L  H  A  F  E  N  L
                      |411                          |421

   |1271     |1281     |1291
TAGAAATCATACGCGGCAGGACCAAGCAACAgtaagttgaccacagccaaagcctggtag
  E  I  I  R  G  R  T  K  Q  H
                      |431

attacatttgccttttagttggaaattaggcttaacaggagagttgctaagatagggca



cagagctcctgcatctctcgccggcattccc



 Exon 12 | Start: 1545 | End: 1744 | Length: 199



cctaccatcattggaaagcagtttgtagtcaatcaaaggtggtctggagaaacaaagttt
```

```
tcagggatacattgtttttataatttttcaccacatgatttttcttctctccaatgtagt



  |1301     |1311     |1321     |1331     |1341     |1351
TGGTCAGTTTTCTCTTGCAGTCGTCAGCCTGAACATAACATCCTTGGGATTACGCTCCCT
 G  Q  F  S  L  A  V  V  S  L  N  I  T  S  L  G  L  R  S  L
                     |441                          |451

  |1361     |1371     |1381     |1391     |1401     |1411
CAAGGAGATAAGTGATGGAGATGTGATAATTTCAGGAAACAAAAATTTGTGCTATGCAAA
 K  E  I  S  D  G  D  V  I  I  S  G  N  K  N  L  C  Y  A  N
                     |461                          |471

  |1421     |1431     |1441     |1451     |1461     |1471
TACAATAAACTGGAAAAAACTGTTTGGGACCTCCGGTCAGAAAACCAAAATTATAAGCAA
 T  I  N  W  K  K  L  F  G  T  S  G  Q  K  T  K  I  I  S  N
                     |481                          |491

  |1481     |1491
CAGAGGTGAAAACAGCTGCAgtaagtcaccgctttctgtttagtttatggagttggttct
 R  G  E  N  S  C  K



aatgggtcctttatttgtatttagaatattgaagggctattcccatttaaattacttttt



tcagttccttaagaagcaaa



 Exon 13 | Start: 1745 | End: 1877 | Length: 132
```

```
catgtctgtgtcacccaaggtcatggagcacagggcccctcccgggaaggtgccgtctcc



tccggcccctcgggtccctgctctgtcactgactgctgtgacccactctgtctccgcaga



  |1501     |1511     |1521     |1531     |1541     |1551
AGGCCACAGGCCAGGTCTGCCATGCCTTGTGCTCCCCCGAGGGCTGCTGGGGCCCGGAGC
  A  T  G  Q  V  C  H  A  L  C  S  P  E  G  C  W  G  P  E  P
  |501                        |511

  |1561     |1571     |1581     |1591     |1601     |1611
CCAGGGACTGCGTCTCTTGCCGGAATGTCAGCCGAGGCAGGGAATGCGTGGACAAGTGCA
  R  D  C  V  S  C  R  N  V  S  R  G  R  E  C  V  D  K  C  N
  |521                        |531

  |1621     |1631
ACCTTCTGGAGGGgtaggaggttatttctttaatccccttgcgttgatcaaaaataaggc
  L  L  E  G
  |541


tccaggttgttgttatagctttacaggcattctgtttgattttctcttccttttattctt



tgcccttggcttt
```

Exon 14 | Start: 1878 | End: 1968 | Length: 90

```
cctggagtcccaactccttgaccattacctcaagttatttggaattttgaagaggtgatt



tgtgttcctgcaataatgtctcaggggtgggctgacgggtttcctcttcctcctctcagt



         |1641     |1651     |1661     |1671     |1681     |1196
TGAGCCAAGGGAGTTTGTGGAGAACTCTGAGTGCATACAGTGCCACCCAGAGTGCCTGCC
 E  P  R  E  F  V  E  N  S  E  C  I  Q  C  H  P  E  C  L  P
                  |551                          |561

         |1701     |1711     |1721
TCAGGCCATGAACATCACCTGCACAGGACGGgtaagagccccttgctgctatccacgtcc
 Q  A  M  N  I  T  C  T  G  R
                  |571

atttcatgggaagggccttcacagaagccgaacagtgatgatggcccagggcatcctgtg



tgggcaggacggccatcagagccacttccca



 Exon 15 | Start: 1969 | End: 2126 | Length: 157



tttctatcatttggctttccccactcacacacactaaatattttaagtaaaaagttactt



ccattttgaaagagaaaagaaagagacatgcatgaacatttttctccaccttggtgcagg
```

```
        |1731     |1741     |1751     |1761     |1771     |1118
GGACCAGACAACTGTATCCAGTGTGCCCACTACATTGACGGCCCCCACTGCGTCAAGACC
G  P  D  N  C  I  Q  C  A  H  Y  I  D  G  P  H  C  V  K  T
                 |581                          |591

        |1791     |1801     |1811     |1821     |1831     |1114
TGCCCGGCAGGAGTCATGGGAGAAAACAACACCCTGGTCTGGAAGTACGCAGACGCCGGC
C  P  A  G  V  M  G  E  N  N  T  L  V  W  K  Y  A  D  A  G
                 |601                          |611

        |1851     |1861     |1871
CATGTGTGCCACCTGTGCCATCCAAACTGCACCTACGGgtgagtggaaagtgaaggagaa
H  V  C  H  L  C  H  P  N  C  T  Y  G
                 |621
```

cagaacatttcctctcttgcaaattcagagatcaaaaatgtctcccaagttttccggcaa

caaattgccgaggtttgtatttgagtcagttacttaag

Exon 16 | Start: 2127 | End: 2165 | Length: 38

ttttaattatttaagagtagtttagcatatattgctttatgatttaattaaaaatctcca

aaatatatgccaaagaagtagaatgagaaaaatgtatatttctctttcacttcctacaga

```
|1881      |1891      |1901      |1911
ATGCACTGGGCCAGGTCTTGAAGGCTGTCCAACGAATGGgtaagtgttcacagctctgtg
 C  T  G  P  G  L  E  G  C  P  T  N  G
          |631
```

```
tcacatggacctcgtcaagaatgaccacactgctgtgggtgaagatgctttcctgcattt
```

```
ctgactgtcctctgtcctgatcaagtttctatggctctg
```

Exon 17 | Start: 2166 | End: 2307 | Length: 141

```
ctttccaagatcattctacaagatgtcagtgcactgaaacatgcaggggcgtgttgagtg
```

```
ccaaggccatggaatctgtcagcaacctcacccttccttgttcctccacctcattccagg
```

```
 |1921      |1931      |1941      |1951      |1961      |1971
GCCTAAGATCCCGTCCATCGCCACTGGGATGGTGGGGGCCCTCCTCTTGCTGCTGGTGGT
 P  K  I  P  S  I  A  T  G  M  V  G  A  L  L  L  L  L  V  V
 |641                          |651

 |1981      |1991      |2001      |2011      |2021      |2031
GGCCCTGGGGATCGGCCTCTTCATGCGAAGGCGCCACATCGTTCGGAAGCGCACGCTGCG
 A  L  G  I  G  L  F  M  R  R  R  H  I  V  R  K  R  T  L  R
 |661                          |671
```

```
 |2041     |2051     |2061
GAGGCTGCTGCAGGAGAGGGAGgtgagtgccagtcctgggtgggctcaggagccctcgca
 R  L  L  Q  E  R  E
 |681
```

```
ccccgacaggaacaagggccagccccgagaacgggccattagcagttgtgtatgttagat
```

```
acataattgtattatgatgcag
```

Exon 18 | Start: 2308 | End: 2430 | Length: 122

```
tcctggcacccaagcccatgccgtggctgctggtccccctgctgggccatgtctggcact
```

```
gctttccagcatggtgagggctgaggtgacccttgtctctgtgttcttgtcccccccagc
```

```
         |2071     |2081     |2091     |2101     |2111     |2121
CTTGTGGAGCCTCTTACACCCAGTGGAGAAGCTCCCAACCAAGCTCTCTTGAGGATCTTG
L  V  E  P  L  T  P  S  G  E  A  P  N  Q  A  L  L  R  I  L
         |691                        |701

         |2131     |2141     |2151     |2161     |2171     |2181
AAGGAAACTGAATTCAAAAAGATCAAAGTGCTGGGCTCCGGTGCGTTCGGCACGGTGTAT
K  E  T  E  F  K  K  I  K  V  L  G  S  G  A  F  G  T  V  Y
         |711                        |721
```

```
AAGgtaaggtccctggcacaggcctctgggctgggccgcagggcctctcatggtctggtg
K


gggagcccagagtccttgcaagctgtatatttccatcatctactttactctttgtttcac


tga
```

Exon 19 | Start: 2431 | End: 2529 | Length: 98

```
agccccagtgtccctcaccttcggggtgcatcgctggtaacatccacccagatcactggg


cagcatgtggcaccatctcacaattgccagttaacgtcttccttctctctctgtcatagg


      |2191      |2201      |2211      |2221      |2231      |2242
GGACTCTGGATCCCAGAAGGTGAGAAAGTTAAAATTCCCGTCGCTATCAAGGAATTAAGA
G  L  W  I  P  E  G  E  K  V  K  I  P  V  A  I  K  E  L  R
      |731                          |741

      |2251      |2261      |2271      |2281
GAAGCAACATCTCCGAAAGCCAACAAGGAAATCCTCGATgtgagtttctgctttgctgtg
E  A  T  S  P  K  A  N  K  E  I  L  D
      |751                          |761
```

tgggggtccatggctctgaacctcaggcccacctttctcatgtctggcagctgctctgc

tctagaccctgctcatctccacatcctaaatgttcactt

Exon 20 | Start: 2530 | End: 2715 | Length: 185

tgagtacgtattttgaaactcaagatcgcattcatgcgtcttcacctggaaggggtccat

gtgcccctccttctggccaccatgcgaagccacactgacgtgcctctccctccctccagg

```
       |2291     |2301     |2311     |2321     |2331     |2321
GAAGCCTACGTGATGGCCAGCGTGGACAACCCCCACGTGTGCCGCCTGCTGGGCATCTGC
E  A  Y  V  M  A  S  V  D  N  P  H  V  C  R  L  L  G  I  C
                         |771                          |787

       |2351     |2361     |2371     |2381     |2391     |2421
CTCACCTCCACCGTGCAGCTCATCACGCAGCTCATGCCCTTCGGCTGCCTCCTGGACTAT
L  T  S  T  V  Q  L  I  T  Q  L  M  P  F  G  C  L  L  D  Y
                         |791                          |808

       |2411     |2421     |2431     |2441     |2451     |2421
GTCCGGGAACACAAAGACAATATTGGCTCCCAGTACCTGCTCAACTGGTGTGTGCAGATC
V  R  E  H  K  D  N  I  G  S  Q  Y  L  L  N  W  C  V  Q  I
                         |811                          |828
```

GCAAAGgtaatcagggaagggagatacggggaggggagataaggagccaggatcctcaca

```
A  K

tgcggtctgcgctcctgggatagcaagagtttgccatggggatatgtgtgtgcgtgcatg

cagcac
```

Exon 21 | Start: 2716 | End: 2871 | Length: 155

```
agccataagtcctcgacgtggagaggctcagagcctggcatgaacatgaccctgaattcg

gatgcagagcttcttcccatgatgatctgtccctcacagcagggtcttctctgtttcagg

 |2471     |2481     |2491     |2501     |2511     |2521
GGCATGAACTACTTGGAGGACCGTCGCTTGGTGCACCGCGACCTGGCAGCCAGGAACGTA
G  M  N  Y  L  E  D  R  R  L  V  H  R  D  L  A  A  R  N  V
                    |831                          |841

 |2531     |2541     |2551     |2561     |2571     |2581
CTGGTGAAAACACCGCAGCATGTCAAGATCACAGATTTTGGGCTGGCCAAACTGCTGGGT
L  V  K  T  P  Q  H  V  K  I  T  D  F  G  L  A  K  L  L  G
                    |851                          |861

 |2591     |2601     |2611     |2621
GCGGAAGAGAAAGAATACCATGCAGAAGGAGGCAAAgtaaggaggtggctttaggtcagc
A  E  E  K  E  Y  H  A  E  G  G  K
```

```
                      |871

cagcattttcctgacaccagggaccaggctgccttcccactagctgtattgtttaacaca


tgcaggggaggatgctctccagacattctgggtgag
```

Exon 22 | Start: 2872 | End: 2947 | Length: 75

```
cctggggtgatctggctcgtctgtgtgtgtcactcgtaattaggtccagagtgagttaac


tttttccaacagagggaaactaatagttgtctcactgcctcatctctcaccatcccaagg


     |2631      |2641      |2651      |2661      |2671      |2681
GTGCCTATCAAGTGGATGGCATTGGAATCAATTTTACACAGAATCTATACCCACCAGAGT
V  P  I  K  W  M  A  L  E  S  I  L  H  R  I  Y  T  H  Q  S
               |881                          |891

     |2691      |2701
GATGTCTGGAGCTACGgtgagtcataatcctgatgctaatgagtttgtactgaggccaag
D  V  W  S  Y  G
               |901


ctggcttttattgttagttaatttacattatatcctctgacatgcaagtattttctttcg
```

```
agataatgactaatga
```

Exon 23 | Start: 2948 | End: 3094 | Length: 146

```
tacagaaatgtaggtttctaaacatcaagaaacagtaaccagtaatgatgactaaagcaa
```

```
gggattgtgattgttcattcatgatcccactgccttcttttcttgcttcatcctctcagg
```

```
         |2711     |2721     |2731     |2741     |2751     |2167
GGGTGACCGTTTGGGAGTTGATGACCTTTGGATCCAAGCCATATGACGGAATCCCTGCCA
  V  T  V  W  E  L  M  T  F  G  S  K  P  Y  D  G  I  P  A  S
                          |911                          |912

         |2771     |2781     |2791     |2801     |2811     |2128
GCGAGATCTCCTCCATCCTGGAGAAAGGAGAACGCCTCCCTCAGCCACCCATATGTACCA
  E  I  S  S  I  L  E  K  G  E  R  L  P  Q  P  P  I  C  T  I
                          |931                          |914

         |2831     |2841
TCGATGTCTACATGATCATGGTCAAGTgtgagtgactggtgggtctgtccacactgccta
  D  V  Y  M  I  M  V  K  C
```

```
gctgagccttggtggctgctcttagccaaacagctgaggcctttgcatccctggagaaat
```

gtcatcacattacttaaggcaggcaca

Exon 24 | Start: 3095 | End: 3192 | Length: 97

ttctttcatcacttatttgactggaagtgtcgcatcaccaatgccttctttaagcaatgc

catctttatcatttcttccagtgttctaattgcactgtttttttctcattccttccccagg

```
  |2851     |2861     |2871     |2881     |2891     |2901
GCTGGATGATAGACGCAGATAGTCGCCCAAAGTTCCGTGAGTTGATCATCGAATTCTCCA
  W  M  I  D  A  D  S  R  P  K  F  R  E  L  I  I  E  F  S  K
  |951                          |961

  |2911     |2921     |2931     |2941
AAATGGCCCGAGACCCCCAGCGCTACCTTGTCATTCAGgtacaaattgcagtctgtgctt
  M  A  R  D  P  Q  R  Y  L  V  I  Q
  |971                          |981
```

ccattgggaagagtccctctaatgagcatctcatgtcactgtgttctgtcacatgccagc

ctggcctccctgtgtcccagatcgcattattaaaccct

Exon 25 | Start: 3193 | End: 3360 | Length: 167

ttataacaaaattggcaaacacacaggcacctgctggcaatagacccctgctcctatagc

caagaagtggaatagcatctctacgggccattctaatagcctcaaaatctctgcaccagg

```
    |2951      |2961      |2971      |2981      |2991      |3001
GGGGATGAAAGAATGCATTTGCCAAGTCCTACAGACTCCAACTTCTACCGTGCCCTGATG
G  D  E  R  M  H  L  P  S  P  T  D  S  N  F  Y  R  A  L  M
                        |991                           |1001

    |3011      |3021      |3031      |3041      |3051      |3061
GATGAAGAAGACATGGACGACGTGGTGGATGCCGACGAGTACCTCATCCCACAGCAGGGC
D  E  E  D  M  D  D  V  V  D  A  D  E  Y  L  I  P  Q  Q  G
                        |1011                          |1021

    |3071      |3081      |3091      |3101      |3111
TTCTTCAGCAGCCCCTCCACGTCACGGACTCCCCTCCTGAGCTCTCTGgtatgaaatctc
F  F  S  S  P  S  T  S  R  T  P  L  L  S  S  L
                        |1031
```

tgtctctctctctctctcaagctgtgtctactcatttgaacaaattgaattttagggaaa

ataaccatctagtgaaactcacatggatatgaagtcaattttaaccaa

Exon 26 | Start: 3361 | End: 3408 | Length: 47

agacaaaaattaaacaccttcacaatataccctccatgaggcacaccacctgcattcagg

aaaagtggatgagatgtggtacaagcattccatgggcaacttctctgtttctttttcaga

```
      |3121      |3131      |3141      |3151      |3161
AGTGCAACCAGCAACAATTCCACCGTGGCTTGCATTGATAGAAATGGGgtatgtatgaac
S  A  T  S  N  N  S  T  V  A  C  I  D  R  N  G
      |1041                          |1051
```

accttataagccagaatttacagctctccactatggctctattttacatggaaaatgcct

taacctaaataatttttaacccagataatcttgagttttcttcctgtgt

Exon 27 | Start: 3409 | End: 3517 | Length: 108

caggcctgcccaacctactaatcagaaccagcatctcaaggagatctcgggtgatttttg

```
caaacactgaagttggggcagccctgaccggagtaaccttccctcatttcctcctgcagc



        |3171     |3181     |3191     |3201     |3211     |3312
CTGCAAAGCTGTCCCATCAAGGAAGACAGCTTCTTGCAGCGATACAGCTCAGACCCCACA
L  Q  S  C  P  I  K  E  D  S  F  L  Q  R  Y  S  S  D  P  T
                 |1061                         |1071

        |3231     |3241     |3251     |3261     |3271
GGCGCCTTGACTGAGGACAGCATAGACGACACCTTCCTCCCAGTGCCTGgtgagtggctt
G  A  L  T  E  D  S  I  D  D  T  F  L  P  V  P  E
                 |1081                         |1091


gtctggaaacagtcctgctcctcaacctcctcgacccactcagcagcagccagtctccag



tgtccaagccaggtgctccctccagcatctccagagggggaaacagtgg




 Exon 28 | Start: 3518 | End: 5600 | Length: 2082




ctcctgctccctgtcataagtctccttgttgaggacattcacagggttcagaacccaggg



atcctgcatgggatggtgctttgctgattacttcacctctgatttctttccactttcaga
```

```
        |3281     |3291     |3301     |3311     |3321     |3133
AATACATAAACCAGTCCGTTCCCAAAAGGCCCGCTGGCTCTGTGCAGAATCCTGTCTATC
  Y  I  N  Q  S  V  P  K  R  P  A  G  S  V  Q  N  P  V  Y  H
                         |1101                        |1111

        |3341     |3351     |3361     |3371     |3381     |3193
ACAATCAGCCTCTGAACCCCGCGCCCAGCAGAGACCCACACTACCAGGACCCCCACAGCA
  N  Q  P  L  N  P  A  P  S  R  D  P  H  Y  Q  D  P  H  S  T
                         |1121                        |1131

        |3401     |3411     |3421     |3431     |3441     |3154
CTGCAGTGGGCAACCCCGAGTATCTCAACACTGTCCAGCCCACCTGTGTCAACAGCACAT
  A  V  G  N  P  E  Y  L  N  T  V  Q  P  T  C  V  N  S  T  F
                         |1141                        |1151

        |3461     |3471     |3481     |3491     |3501     |3115
TCGACAGCCCTGCCCACTGGGCCCAGAAAGGCAGCCACCAAATTAGCCTGGACAACCCTG
  D  S  P  A  H  W  A  Q  K  G  S  H  Q  I  S  L  D  N  P  D
                         |1161                        |1171

        |3521     |3531     |3541     |3551     |3561     |3175
ACTACCAGCAGGACTTCTTTCCCAAGGAAGCCAAGCCAAATGGCATCTTTAAGGGCTCCA
  Y  Q  Q  D  F  F  P  K  E  A  K  P  N  G  I  F  K  G  S  T
                         |1181                        |1191

        |3581     |3591     |3601     |3611     |3621     |3136
CAGCTGAAAATGCAGAATACCTAAGGGTCGCGCCACAAAGCAGTGAATTTATTGGAGCAT
  A  E  N  A  E  Y  L  R  V  A  P  Q  S  S  E  F  I  G  A
                         |1201

        |3641     |3651     |3661     |3671     |3681     |3196
GACCACGGAGGATAGTATGAGCCCTAAAAATCCAGACTCTTTCGATACCCAGGACCAAGC


        |3701     |3711     |3721     |3731     |3741     |3157
CACAGCAGGTCCTCCATCCCAACAGCCATGCCCGCATTAGCTCTTAGACCCACAGACTGG


        |3761     |3771     |3781     |3791     |3801     |3118
TTTTGCAACGTTTACACCGACTAGCCAGGAAGTACTTCCACCTCGGGCACATTTTGGGAA
```

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         |3821      |3831      |3841      |3851      |3861      |3178
GTTGCATTCCTTTGTCTTCAAACTGTGAAGCATTTACAGAAACGCATCCAGCAAGAATAT

         |3881      |3891      |3901      |3911      |3921      |3139
TGTCCCTTTGAGCAGAAATTTATCTTTCAAAGAGGTATATTTGAAAAAAAAAAAAAGTAT

         |3941      |3951      |3961      |3971      |3981      |3199
ATGTGAGGATTTTTATTGATTGGGGATCTTGGAGTTTTTCATTGTCGCTATTGATTTTTA

         |4001      |4011      |4021      |4031      |4041      |4150
CTTCAATGGGCTCTTCCAACAAGGAAGAAGCTTGCTGGTAGCACTTGCTACCCTGAGTTC

         |4061      |4071      |4081      |4091      |4101      |4111
ATCCAGGCCCAACTGTGAGCAAGGAGCACAAGCCACAAGTCTTCCAGAGGATGCTTGATT

         |4121      |4131      |4141      |4151      |4161      |4171
CCAGTGGTTCTGCTTCAAGGCTTCCACTGCAAAACACTAAAGATCCAAGAAGGCCTTCAT

         |4181      |4191      |4201      |4211      |4221      |4132
GGCCCCAGCAGGCCGGATCGGTACTGTATCAAGTCATGGCAGGTACAGTAGGATAAGCCA

         |4241      |4251      |4261      |4271      |4281      |4192
CTCTGTCCCTTCCTGGGCAAAGAAGAAACGGAGGGGATGGAATTCTTCCTTAGACTTACT

         |4301      |4311      |4321      |4331      |4341      |4153
TTTGTAAAAATGTCCCCACGGTACTTACTCCCCACTGATGGACCAGTGGTTTCCAGTCAT

         |4361      |4371      |4381      |4391      |4401      |4114
```

```
GAGCGTTAGACTGACTTGTTTGTCTTCCATTCCATTGTTTTGAAACTCAGTATGCTGCCC

          |4421      |4431      |4441      |4451      |4461      |4174
CTGTCTTGCTGTCATGAAATCAGCAAGAGAGGATGACACATCAAATAATAACTCGGATTC

          |4481      |4491      |4501      |4511      |4521      |4135
CAGCCCACATTGGATTCATCAGCATTTGGACCAATAGCCCACAGCTGAGAATGTGGAATA

          |4541      |4551      |4561      |4571      |4581      |4195
CCTAAGGATAGCACCGCTTTTGTTCTCGCAAAAACGTATCTCCTAATTTGAGGCTCAGAT

          |4601      |4611      |4621      |4631      |4641      |4156
GAAATGCATCAGGTCCTTTGGGGCATAGATCAGAAGACTACAAAAATGAAGCTGCTCTGA

          |4661      |4671      |4681      |4691      |4701      |4117
AATCTCCTTTAGCCATCACCCCAACCCCCCCAAAATTAGTTTGTGTTACTTATGGAAGATA

          |4721      |4731      |4741      |4751      |4761      |4177
GTTTTCTCCTTTTACTTCACTTCAAAAGCTTTTTACTCAAAGAGTATATGTTCCCTCCAG

          |4781      |4791      |4801      |4811      |4821      |4138
GTCAGCTGCCCCCAAACCCCCTCCTTACGCTTTGTCACACAAAAAGTGTCTCTGCCTTGA

          |4841      |4851      |4861      |4871      |4881      |4198
GTCATCTATTCAAGCACTTACAGCTCTGGCCACAACAGGGCATTTTACAGGTGCGAATGA

          |4901      |4911      |4921      |4931      |4941      |4159
CAGTAGCATTATGAGTAGTGTGGAATTCAGGTAGTAAATATGAAACTAGGGTTTGAAATT
```

```
         |4961      |4971      |4981      |4991      |5001      |5110
GATAATGCTTTCACAACATTTGCAGATGTTTTAGAAGGAAAAAAGTTCCTTCCTAAAATA


         |5021      |5031      |5041      |5051      |5061      |5170
ATTTCTCTACAATTGGAAGATTGGAAGATTCAGCTAGTTAGGAGCCCACCTTTTTTCCTA


         |5081      |5091      |5101      |5111      |5121      |5131
ATCTGTGTGTGCCCTGTAACCTGACTGGTTAACAGCAGTCCTTTGTAAACAGTGTTTTAA


         |5141      |5151      |5161      |5171      |5181      |5191
ACTCTCCTAGTCAATATCCACCCCATCCAATTTATCAAGGAAGAAATGGTTCAGAAAATA


         |5201      |5211      |5221      |5231      |5241      |5152
TTTTCAGCCTACAGTTATGTTCAGTCACACACACATACAAAATGTTCCTTTTGCTTTTAA


         |5261      |5271      |5281      |5291      |5301      |5113
AGTAATTTTTGACTCCCAGATCAGTCAGAGCCCCTACAGCATTGTTAAGAAAGTATTTGA


         |5321      |5331      |5341      |5351
TTTTTGTCTCAATGAAAATAAAACTATATTCATTTCCACTCTAttatgctctcaaatacc


cctaagcatctatactagcctggtatgggtatgaaagatacaaagataaataaaacatag


tccctgattctaagaaattcacaatttagcaaaggaaatggac
```