

Gene: EGFR - Sequence: NG_007726.3

Date : January 15, 2015

1st line: Base numbering. Full stops for intronic +/- 5, 10, 15...

2nd line: Base sequence. lower case Introns, upper case Exons

3rd line: Amino acid sequence. Printed on FIRST base of codon

4th line: Amino acid numbering. Numbered on 1st and increments of 10

Exon 1 | Start: 5001 | End: 5334 | Length: 333

```
. . . . .
ggaccgggtccagaggggcagtgctgggaacgcccctctcggaattaactcctcagggc

. . . . .
accgcgtccctcccatgcgccgccccactcccgcggagactaggtcccgcgggggcca

. . . . .
ccgctgtccaccgcctccggcggccgctggccttgggtccccgctgctggttctctctccc

. . . . .
tcctcctcgcattctcctcctcctctgctcctcccgatccctcctccgcccgcctggtccc

. . . . .
tcctcctcccgccctgcctccccgcctcggcccgcgcgagctagacgtccgggcagcc

      |-239      |-229      |-219      |-209      |-199      |-189
CCCCGGCGCAGCGCGGCCGAGCAGCCTCCGCCCCCGCACGGTGTGAGCGCCCACGCG

      |-179      |-169      |-159      |-149      |-139      |-129
GCCGAGGCGGCGGAGTCCCGAGCTAGCCCCGGCGGCGCGCGCCGAGACCGGACGAC

      |-119      |-109      |-99      |-89      |-79      |-69
AGGCCACCTCGTCGGCGTCCGCCGAGTCCCCGCCTCGCCGCCAACGCCACAACCACCGC

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

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


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

Exon 3 | Start: 129274 | End: 129457 | Length: 183

3

.
 caccatcattaacaattttatctggccgcccccggaagttcactgggctaattgcggg

 actcttgttcgcaccatggcatctctttagcagaacataaatgcgaagagcacatgcatc

 cttcatgggaatttaaaggagctggaaagagtgtcaccgcagttccattctccgcaga
 |431 |441 |451 |461 |471 |481
 AAATCCTGTCATGGCGCGGTGCGGTCAGCAACAACCTGCCCTGTGCAACGTGGAGAGCA
 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
 ACCACCTGGGCAGCTgtaagtgtcgatacacactatctctgcctccagctcctatgggg
 H L G S C

 gagagctctacagcactggggcaggggagagaagccatgtttagtaagtcacattaatca

 gaaacaaaagtagtaagcaaaatatctgaccactagaaaagcatgtatttaccacggac

 atagagatcggttttttgtggcgggtggcagccagctggttggcagtgaggccaccgg

 aggcatgcccctgcagggacagcagagcacttgtgtcctgagaagagctgctgttcatg

 gggctggcagcacca

Exon 5 | Start: 137263 | End: 137331 | Length: 68

```

. . . . .
gcagattgtaaacaaggaaacctcaaattcatgaaaaattcttgcttatgtggcccatgtc

. . . . .
agtaattactctctgcctcagtttccgcagctgacatgtaaataaaagcagttcatggtt

. . . . .
catcttcttttcttatcggggtctcaagtgattctacaaaccagccagccaaacaatcag

. . . . .
agaataagttgaaaagattgtcttcatttattgaatgtgcttaactcaggcccggaag

. . . . .
ggcgtcatcagtttctcatcatttcactgagatatgcatctattacttttacatttcagg

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

|621
GCCAGAAACgtaagtcagtgacagcctcagacctatgtgtgaccgcccctctcttcctt
  Q  K  L

. . . . .
cacttgcttaggtgattggatttgttttccctctgaagactccaaagagttactttatta

. . . . .
cagggtcagatgtgaaccagtaggtgaaggacagtcttgcaaattctaccgcatgcagtt

. . . . .
aatccagggtgggctattttgggagcttcagcctatcacaataagtgaacatcagcagg

. . . . .
ggctgggcgcggtggctcaccctataatcccagcactttgggaggcggaggcggtcgga

. .
tcacgaggt

```

Exon 6 | Start: 138515 | End: 138633 | Length: 118

.
 agcaggatattttgttctttgtatgtgctttctgcattgcccaagatgcatctaattatt

 tagcaggctctcaaagtctagacttgatctcatgagttctcttaagtgattaaaaataaat

 caggagaaaaaagaggcaatcagaaaagggcatggtttgacttagtttgaaatgtggtttc

 gttggaagcaaagtgtgtcttcactttttcatgaaaaagtctgcaagtgtctgacatc

 cctgggaaatgatcctaccctcactcttcagctcacagggaacctttgctctttttcagt

 |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
 ACTGCTGCCACAACCAGTGTGCTGCAGGCTGCACAGGCCCCGGGAGAGCGACTGCCTGg
 C C H N Q C A A G C T G P R E S D C L
 |231 |241

 taagatgccccctccagcagcctccctggagcaggctggggctgcacccgccccaccaca

 ccaggacagaagacttcctgtgggggagctgtcaattagcatttgtcataacagacagga

 tattgcctctgcctggtgacaaagtatcttttagtatcctgcctccaccactcactgaga

 ccttgggaaaatgatgggactaccatgcctccatttccttacctgacaatgatgcataac

 aaagtctctcccagttgaatgcttaaatgatgagatgcctgtgatgtccgtcattagga

Exon 7 | Start: 139980 | End: 140121 | Length: 141

.
 accgctataatgtgtgaactccatcatctatacgttagtaaacagacgtatTTTTatcat

 aatccataaattatgataggtgggacagtgcacctaagaaaaaatggactTTTTagaga

 agggctcttctgactctgcagaggcgccagctgggttttcccacactagtggaaacta

 ggctgcaaagacagtaacttgggcttctgacgggagtcaacaccgtgctgcgcttcctc

 cgtgtgtggcgctgagtgtacttacctcacttgcccagcgtgtcctctctcctccatagg

 |751 |761 |771 |781 |791 |801
 GTCTGCCGCAAATTCCGAGACGAAGCCACGTGCAAGGACACCTGCCCCCACTCATGCTC
 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
 TACAACCCACACGTACCAGATGGATGTGAACCCGAGGGCAAATACAGCTTTGGTGCC
 Y N P T T Y Q M D V N P E G K Y S F G A
 |271 |281

 |871 |881
 ACCTGCGTGAAGAAGTGTCCCCgtgagtcctcctctgtggggcctctaactgggtcaggca
 T C V K K C P R
 |291

 tccttgtcccgtctgtctcctgctgagccctggagtatcccatcttggagagtcttgg

 gtggatgtgtttgccttgcttggaggaggcgaccctgtgccgtccaggcacacaggcga

 ggggaggggctggcttgctaccgaggagcgggcaggtggtggccatctccacccatgggg

 gctgctcagtgcacagggcagatctgggtggccaggccacctcacaggagaaacacctgc

 tgctcagccctcaccactcatc

Exon 8 | Start: 141799 | End: 141915 | Length: 116

```
. . . . .
ggtggaggagagggctgaggtgcctgctgggacgcaaaacagctggcccctcaagggacc

. . . . .
cagtgtttcctgccatgatgaaacacctgtattgtccacattgcggcctagaatgttatt

. . . . .
aaactcttgaacgggattccttctctatttgcaacctttcattctttgtccttaaagtaa

. . . . .
ataaagccaaaggaggatggagcctttccatcacccctcaaggaggacctggaccgcctgt

. . . . .
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

. . . . .
ggaagcccgcggtgtgcggaagaggcttgttctcggctgctgaggctgggctctcatgc

. . . . .
cacctcaaaggaacacatcttctcttctcattaaaaaacaactatacatatcgtttct

. . . . .
ttaaacagaagataaagctgtaaagctaggtaggcaatgggaaggcactgaaggttgt

. . . . .
gacggggtggggggctctgatgagaacagtcacagagccagccccgctcagcagctgcca

. . . . .
ggtgcccagccctgggggagaatccagggaaggcagagctggaagcagtcagctcca
```

Exon 9 | Start: 142502 | End: 142628 | Length: 126

```
. . . . .
cagtgacgctccaagcggcccatgggaaataatgaggagaacgcaaggtcagtgtaggt

. . . . .
gacagggatggcatctcctacaccgccgtagccccaagtgtactataggtcctggtgtc

. . . . .
cccccttcccgctgcactctcccagccccttcagtgtttgttgagtgaatgaaggatg

. . . . .
atgtggcagtgggcgttccggtgaccggaattccttctgcttccctctgcctgtggatc

. . . . .
cctagctattcttaatccaacaaatgtgaacggaatacacgtctcttcttctctgcagt

      |1011      |1021      |1031      |1041      |1051      |1061
TGTTAACGGAATAGGTATTGGTGAATTTAAAGACTCACTCTCCATAAATGCTACGAATA
      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      . . . . .
TTAGGGGgtgagtcacagggttcagttgcttggtataaagaaaaacaaatctgccttttta
      R  G

. . . . .
actggtagagattggtgatcaataatcacctgttggttgcagtgactccttcacac

. . . . .
atactcctcctctggatccacaggaactggatattctgaaaaccgtaaaggaaatcacag

. . . . .
gtttgagctgaattatcacatgaatataaatgggaaatcagtgtttagagagagaactt

. . . . .
ttcgacatatttctgttccttggaaataaaaacatttcttctgaaattttaccgttaat
```

. .
ggctgat

Exon 10 | Start: 142728 | End: 142801 | Length: 73

.
tctgcctgtggatccctagctattcttaatccaacaaatgtgaacggaatacacgtctct
.
cttatctctgcagtggtgaacggaataggtattggtgaatttaaagactcactctccata
.
aatgctacgaatattaaacacttcaaaaactgcacctccatcagtggcgatctccacatc
.
ctgccggtggcatttagggggtgagtcacaggttcagttgcttggtataaagaaaaacaaa
.
atctgcctttttaactggtagagattggtgatcaataatcacccctgttggtttgtttcagt
|1141 |1151 |1161 |1171 |1181 |1191
TGA CTCCTT CACACATA CTCTCTCT GGATCCAC AGGA ACTGGATATT CTGAAA ACCGT
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
.
tagagagagaacttttcgacatatcttctgttcccttggaataaaaacatttcttctgaa
.
attttaccgttaatggctgatgttttgatatttttcaaagtcagtttctcctgcaggc
.
aaaaggggacacgttaagtccaggcttgggtcattcactgcggtgtaaacacgctttctc
.
cctcccgcccgcccccagccagctgccttggtggcccataacccctgagggttagaggggag

. . .
gggacaggggtagg

Exon 11 | Start: 143632 | End: 143722 | Length: 90

.
agcctcttcggggtaatcagatacgcggcgcagcaggggtctcagggccacagccagggg
.
ggcggcgggagacatgcggaatcgagcgggaaggcgggaggcagctgtgaactgtggctc
.
ggcctgcgtccgccctgcgcatgtacactcagagaagatgataatgaaaagaaagcaaa
.
tccaattttcccacttactgttcatataatacagagtccttgagagtctagagtaatgtc
.
tcatacaaaaaagaaactcctacgtgggtgtgtgtctgaagtctttcatctgccttacagg
|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
.
attacatttgccttttttagttggaaattaggcttaacaggagagttgctaagatagggca
.
cagagctcctgcattctctcgccggcattcccaaatgctatctcacatgagcaggcacagg
.
gagcaagactgcacgaccactggcacaggctgtccgctaaccacagacttctcagcgct
.
cgccagtgcttctgcttctgtgtccactccagatcccacattgcacttagttgtcaaatc

.
ttttcagtccatttctaacctatattagctc

Exon 12 | Start: 146108 | End: 146307 | Length: 199

.
tcaatttccaggcaaaatgaaaatggagaaaatataatgacattaaggcattttattcat

.
cctccccatctgccactgggttaaagataactaaataaacaaggaactatcttttgcctgg

.
aggaactttaaaaacacctgcagttttcaaaaggcagtggtgtgcctcccacagcatga

.
cctaccatcattggaaagcagttttagtcaatcaaaggcgtctggagaaacaaagttt

.
tcagggatacattgtttttataatttttcaccacatgatttttcttctctccaatgtagt

|1301 |1311 |1321 |1331 |1341 |1351
TGGTCAGTTTTCTCTTGTCAGTCGTCAGCCTGAACATAACATCCTTGGGATTACGCTCCCT
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
CAAGGAGATAAGTGATGGAGATGTGATAATTTGAGGAAACAAAAATTTGTGCTATGCAAA
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

.

aatgggtcctttatttgtatttagaatattgaagggtattcccatttaaattacttttt

 tcagttccttaagaagcaaattaaaatcttaagattcctaactgtgaaattaccatgtga

 attccattaaaactttttccagatcattaccattcaatgggatgaatttacctgaggtt

 taggctaccaattatttgaatgtaagtaactaaatttagtattagttatattacctttt

 agttgtaggtcactctctgc

Exon 13 | Start: 147468 | End: 147600 | Length: 132

.
 ggactcacggcaccccctctcgggtgccagggtgcctggctcccaccaggaggaagacct

 gtcctccactgtcaggcacatttcagtcctcccagcagccagcacaaactactttgtcctt

 ccagtcacggctcggcctctgggaagcccagtcctgtgtcctcctccttcaggggtagccag

 catgtctgtgtcacccaagggtcatggagcacagggccctcccgggaagggtgccgtctcc

 tccggcccctcgggtccctgctctgtcactgactgctgtgaccactctgtctccgcaga

1501	1511	1521	1531	1541	1551
AGGCCACAGGCCAGGTCTGCCATGCCTTGCTCCCCGAGGGCTGCTGGGGCCCGGAGC					
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.
------	-------	---	---	---	---	---	---	---

ACCTTCTGGAGGGgtaggagggttattttctttaatccccttgcggttgatcaaaaataaggc
 L L E G
 |541

.
 tccagggtgtgttatagctttacaggcattctgtttgattttctcttccttttattctt

 tggccttggcttttgagggttttgggttttctgtggggagacgggaagttgtttgattgc

 gttatttttggcaaatttaagcacaaataggaaataagcaagtattattgcctaataataat

 ccaataatttatagaatctcttttctggaagtatcttaaattttctaagctacaaaaa

 gttcctaagacaa

Exon 14 | Start: 149702 | End: 149792 | Length: 90

.
 acacctcctcaggactatcttttcttttatcatttggcttgcttacccaatatgcaaaaa

 ctatgctgtagaaaaagcagaaaagatatcttgattatgaatgaagctcctgtgtttact

 cagagagaagatgaccaggattcagttaacaaaatcagctgattatattactatatagt

 cctggagtcaccaactccttgaccattacctaagttatttgaattttgaagaggtgatt

 tgtgttcctgcaataatgtctcaggggtgggctgacgggtttcctcttcctcctcctcagt

1641	1651	1661	1671	1681	1691
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
------	------	------	---	---	---	---

at t t c a t g g g a a g g g c c t t c a c a g a a g c c g a a c a g t g a t g a t g g c c c a g g g c a t c t g t g
t g g g c a g g a c g g c c a t c a g a g c c a c t t c c c a g a g g a g a c g g c a g g c g c t g a c a g c g c t g t
c c g g g c a g g g t g t c g g t g a c a t t a g c a c a c a t t a g c c t g c g a t g a a c a t t c a c t c t t
c t g c t g a c a c c c c a a c c t t a t c t a a g c t t a t c a a a t c c t c a c a t t t a a c g g a g g c t g t t
t t c a c c t g g t t t c c c c a t c c c t g a c a c t a g t

ttttgccaaggaaagatgccacaaatggttaagcagaatgcaataatgtagagaatatca
tttctttcatgctggtgtatatcatatgcattcaaaacagggagaacttctaagcaact
aacagtgaccatatcaagcaggtgcaatcacagaataactggttttctcctttaagaatt
tttctatcatttggtttcccccactcacacacactaaatattttaagtaaaaagttactt
ccattttgaaagagaaaagaaagagacatgcatgaacatttttctccaccttggtgcagg

16

TGCCCCGGCAGGAGTCATGGGAGAAAAACAACACCCTGGTCTGGAAGTACGCAGACGCCGGC
 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
 CATGTGTGCCACCTGTGCCATCCAACTGCACCTACGGgtgagtggaaagtgaaggagaa
 H V C H L C H P N C T Y G
 |621

.
 cagaacatttcctctcttgcaaattcagagatcaaaatgtctcccaagttttccggcaa

 caaattgccgaggtttgtatttgagtcagttacttaagggttttggtccccacagccat

 gccagtagcaacttgcttgtagcaggcctcagtgagtggaatgactctgccatgcac

 cgtgtccccggcgggcctgtgttgcaatgctgcacatcacaacaggagggtaggggg

 acaaaagagcacaggtcctggcagctgccacagtctcc

Exon 16 | Start: 157144 | End: 157182 | Length: 38

.
 attatctgtgtcaaaagccagatgtgaaaacatctcaatacaaaactggctgctttgttc

 aatgctagaacaacgcctgtcacagagtagaaactcaaaaatatttgctgagtgaatgaa

 caaatgaataaatgcataataaataattaaccaccaatccaacatccagacacatagtga

 ttttaattatttaagagtagtttagcatatattgctttatgatttaattaaaaatctcca

 aaatatatgccaaagaagtagaatgagaaaaatgtatatttctctttcacttcctacaga
 |1881 |1891 |1901 |1911

ATGCACTGGGCCAGGTCTTGAAGGCTGTCCAACGAATGGgtaagtgttcacagctctgtg
 C T G P G L E G C P T N G
 |631

.
 tcacatggacctcgtcaagaatgaccacactgctgtgggtgaagatgctttcctgcattt

 ctgactgtcctctgtcctgatcaagtttctatggctctgggccagcctaccctcagccag

 ggtttctgcagagactgccagctggttccacgtggctccacgtgccaactttgtcctca

 gtggagggaagtgtggacacacagtgtctggggctgtccctgtccgccgttgctcgtatg

 catggcctgcctctgaattccttggttccactggttttg

Exon 17 | Start: 158952 | End: 159093 | Length: 141

.
 catattttgttaatcaacaaattgaaaaatactcattatatggagaggtccagataaagc

 ctcaattttaaaaaatgaggaaaagtgtgcctggtaggggactggggagagccttgagaaa

 gttggaaacgttgccttagaagcctgttttttctccttttagaagctacatagtgtctca

 ctttccaagatcattctacaagatgtcagtgactgaaacatgcaggggcgtgttgagtg

 ccaaggccatggaatctgtcagcaacctcacccttccttggttcctccacctcattccagg

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

 acataattgtattatgatgcagaaagaatctctgaatgtgcagttataccagttggtga

 catgttggtacatccatccgaggaaatggcaatgtttctaggctgcacccttcaatgtcc

 acaaagctgtgtggcatctgcttaggacccggtgcctgtgtgtgcataggaggaggcca

 ggaagcctggctgttgatccca

Exon 18 | Start: 159890 | End: 160012 | Length: 122

.
 cctaccggagttttcaatccagttaataggcgtggaaacagacatagaaattgtgtttgt

 tgaaaggtagctgttcagttaaagaacacctgtatcagagcctgtgtttctaccaacttc

 tgtcaagctctgtagagaaggcgtacatttgccttccaaatgagctggcaagtgccgtg

 tcctggcacccaagcccatgccgtggctgctggtccccctgctgggcatgtctggcact

 gctttccagcatggtgagggtgaggtgacccttgtctctgtgttcttgtccccccagc
 |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
AAGGAACTGAATTCAAAAAGATCAAAGTGCTGGGCTCCGGTTCGGTCACGGTGTAT
K E T E F K K I K V L G S G A F G T V Y
|711 |721

AAGgtaaggTccctggcacaggcctctgggctgggccgcagggcctctcatgggtctggtg
K

gggagcccagagtcccttgcaagctgtatatttccatcatctactttactctttgtttcac

tgagtgtttgggaaactccagtgtttttcccaagttattgagaggaaatctttataacc

acagtaatcagtggtcctgtgagaccaattcacagaccaaaggcatttttatgaaagggg

ccattgaccttgccatgggggtgcagcacaggcgaggaggaggccgcctctcaccgcacg

gca

Exon 19 | Start: 160691 | End: 160789 | Length: 98

taggcctagacgcagcatcattaaattctggatgaaatgatccacacggactttataaca

ggctttacaagcttgagattcttttatctaaataatcagtggtgattcgtggagcccaaca

gctgcagggtgcggggcggtcacagccccagcaatatcagccttaggtgcggtccac

agccccagtgTccctcaccttcgggggtgcatcgctggtaacatccaccagatcactggg

.
 cagcatgtggcaccatctcacaattgccagttaacgtcttccttctctctctgtcatagg

 |2191 |2201 |2211 |2221 |2231 |2241
 G G A C T C T G G A T C C C A G A A G G T G A G A A A G T T A A A A T T C C C G T C G C T A T C A A G G A A T T A A G A
 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
 G A A G C A A C A T C T C C G A A A G C C A A C A A G G A A A T C C T C G A T g t g a g t t t c t g c t t t g c t g t g
 E A T S P K A N K E I L D
 |751 |761

 tgggggtccatggctctgaacctcaggccaccttttctcatgtctggcagctgctctgc

 tctagaccctgctcatctccacatcctaaatgttcactttctatgtctttccctttctag

 ctctagtgggtataactccctccccttagagacagcactggcctctcccatgctggtatc

 caccccaaaaggctggaaacaggcaattactggcatctacccagcactagtttcttgaca

 cgcgatgagtgagtgtctcttggtgagcctggagcatg

Exon 20 | Start: 167262 | End: 167447 | Length: 185

.
 ggtgactccgactcctcctttatccaatgtgctcctcatggccactgttgacctgggcctc

 tctgtcatggggaatccccagatgcacccaggaggggccctctcccactgcatctgtcac

 ttcacagccctgcgtaaacgtccctgtgctaggtcttttgaggcacagcttttcctcca

 tgagtacgtattttgaaactcaagatcgcatctcatgcgtcttcacctggaaggggtccat

```

. . . . .
gtgcccctccttctggccaccatgcgaagccacactgacgtgcctctccctccctccagg

      |2291      |2301      |2311      |2321      |2331      |2341
GAAGCCTACGTGATGGCCAGCGTGGACAACCCACGTGTGCCGCCTGCTGGGCATCTGC
E  A  Y  V  M  A  S  V  D  N  P  H  V  C  R  L  L  G  I  C
                        |771                                |781

      |2351      |2361      |2371      |2381      |2391      |2401
CTCACCTCCACCGTGCAGCTCATCAGCAGCTCATGCCCTTCGGCTGCCTCCTGGACTAT
L  T  S  T  V  Q  L  I  T  Q  L  M  P  F  G  C  L  L  D  Y
                        |791                                |801

      |2411      |2421      |2431      |2441      |2451      |2461
GTCCGGGAACACAAAGACAATATTGGCTCCCAGTACCTGCTCAACTGGTGTGTGCAGATC
V  R  E  H  K  D  N  I  G  S  Q  Y  L  L  N  W  C  V  Q  I
                        |811                                |821

GCAAAGgtaatcaggggaaggagatacggggaggggagataaggagccaggatcctcaca
A  K

. . . . .
tgcggtctgcgctcctgggatagcaagagtttgccatggggatatgtgtgtgcgtgcatg

. . . . .
cagcacacacacattcctttattttggattcaatcaagttgatcttcttgtgcacaaatc

. . . . .
agtgcctgtcccatctgcatgtggaaactctcatcaatcagctacctttgaagaattttc

. . . . .
tctttattgagtgctcagtggtgctgatgtctctgttcttatttctctggaattctttg

. . .
tgaata

```

Exon 21 | Start: 177688 | End: 177843 | Length: 155

.

agttcaagcccaggtctcaactgggcagcagagctcctgctcttctttgtcctcatatac

 gagcacctctggacttaaaacttgaggaactggatggagaaaagttaatggtcagcagcg

 ggttacatcttctttcatgcgctttccattctttggatcagtagtcactaacgttcgcc

 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

 tgcaggggaggatgctctccagacattctgggtgagctcgagcagctgctgctggcagc

 tgggtccagccagggtctcctggtagtgtgagccagagctgctttgggaacagtacttgc

 tgggacagtgaatgaggatgttatccccaggatgattagcaaagttaggtttcagtc

 tctccctgcaggatatataagtccccttcaatagcg

Exon 22 | Start: 178735 | End: 178810 | Length: 75

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. . . . .
gggccctgaaaacacacgcagacctggatgagtgaggccactgggcacaccagggtcc

. . . . .
cagctcaccagagcagcctgggacacagagggtgctcagaaacctaccagagcagccctg

. . . . .
aactccgtcagactgaaatcccctgttgccgggaggaggcgccgggcctgggggacgggt

. . . . .
cctggggtgatctggctcgtctgtgtgtgtcactcgtaattagggtccagagtgagttaac

. . . . .
ttttccaacagaggaaactaatagttgtctcactgcctcatctctaccatccaagg

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

      |2691      |2701. . . . .
GATGTCTGGAGCTACGtgagtcataatcctgatgctaagtgagttgtactgaggccaag
D V W S Y G
      |901

. . . . .
ctggcttttattgttagttaatttacattatcctctgacatgcaagtattttctttcg

. . . . .
agataatgactaatgataatgtaatcattgctgtctatctattgtactgagaaaacacgg

. . . . .
cagaggaaatcgagtccagctgccgtccaaaagtcactggagattgcaatgagctcgtct

. . . . .
ggcagggtggggggtatgggagggaagagcttaggaaacggctctccctgcaaagtcca

. . . . .
accaaactttaacgtt
```


Exon 23 | Start: 184686 | End: 184832 | Length: 146

```
. . . . .
ttaattaccaaagtttaccacttatcagtcacttactacttgctgggcattgcactaagc

. . . . .
atttcagttgtattatcttggtgggtccttacagcaatcctgtgaaacagatactgctat

. . . . .
taccctactttatagagaggttagactgaggcttccagcattgaagcaaattgcccaagac

. . . . .
tacagaaatgtaggtttctaacaatcaagaaacagtaaccagtaatgatgactaaagcaa

. . . . .
gggattgtgattgttcattcatgatcccactgccttcttttcttgcttcacctctcagg

      |2711      |2721      |2731      |2741      |2751      |2761
GGGTGACCGTTTGGGAGTTGATGACCTTTGGATCCAAGCCATATGACGGAATCCCTGCCA
  V  T  V  W  E  L  M  T  F  G  S  K  P  Y  D  G  I  P  A  S
                        |911                                |921

      |2771      |2781      |2791      |2801      |2811      |2821
GCGAGATCTCCTCCATCCTGGAGAAAGGAGAACGCCTCCCTCAGCCACCCATATGTACCA
  E  I  S  S  I  L  E  K  G  E  R  L  P  Q  P  P  I  C  T  I
                        |931                                |941

      |2831      |2841
TCGATGTCTACATGATCATGGTCAAGTgtgagtgactggagggtctgtccacactgccta
  D  V  Y  M  I  M  V  K  C

. . . . .
gctgagccttggtggctgctcttagccaaacagctgaggcctttgcatccctggagaaat

. . . . .
gtcatcacattacttaaggcaggcacacaaatccagaaacatctgtaaataccccttcaa

. . . . .
gcattcttttaagacacttcttgactcattgggcagtatgacctgacatttgcccatgt

. . . . .
ttgcaagcaaataaaataaaactaaagtcttccgcaagccattacaccaaataattctatt
```

.
cgctgagttactcaatgaaataccgag

Exon 24 | Start: 186285 | End: 186382 | Length: 97

.
agaccacactgctccatcccctcaggcgtaacacaggatgctgaccccaggaagagtgg

.
gcgtagaaaaactagagggcattattgttattctgattcaaagtacagtgcctggcatgg

.
tctttaaacagtaaccagtactagctggccaagacagaaaagtctaccacaaagacttgg

.
ttctttcatcacttatttgactggaagtgtcgcatcaccaatgccttctttaagcaatgc

.
catctttatcatttcttccagtgttctaattgcactgttttttctcattccttccccagg

|2851 |2861 |2871 |2881 |2891 |2901
GCTGGATGATAGACGAGATAGTCGCCAAAGTTCCGTGAGTTGATCATCGAATTCTCCA
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
AAATGGCCCGAGACCCCGAGCGCTACCTTGTCATTGAGgtacaaattgcagtctgtgctt
M A R D P Q R Y L V I Q
|971 |981

.
ccattgggaagagtcctctaatagagcatctcatgtcactgtgttctgtcacatgccagc

.
ctggcctccctgtgtcccagatcgattattaaaccctccagcgcattagagcaagcctc

.
agtaaggcgcaggccacatcgtgaactaagcagcatccgtgagtggggcccaccaactc

.
catctccccctccccgtctgaactctcctctgggtgctcgtcctcactgtccggctagcca

.
aagcctcagctgggtctaagagagaagcatggtctatt

Exon 25 | Start: 187157 | End: 187324 | Length: 167

.
acagcaaggtgcacactcgaatgctgcagcttcttccctttctgtttcctcagaagc

.
tatttgaatctcatgtaggggctttcaagcatcaaaggatggttcatgttttattttaag

.
gcaccacatcatgtcatgaggggagggcagctataatttagagaaccaagggggatttca

.
ttataacaaaattggcaaacacacaggcacctgctggcaatagaccctgctcctatagc

.
caagaagtggaatagcatctctacgggccattctaatagcctcaaaatctctgcaccagg

 |2951 |2961 |2971 |2981 |2991 |3001
GGGGATGAAAGAATGCATTTGCCAAGTCCTACAGACTCCAACCTCTACCGTGCCCTGATG
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 . .
TTCTTCAGCAGCCCCCTCCACGTCACGGACTCCCTCCTGAGCTCTCTGgtatgaaatctc
F F S S P S T S R T P L L S S L
 |1031

.
tgtctctctctctctcaagctgtgtctactcatttgaacaaattgaattttagggaaa

.
ataaccatctagtgaactcacatggatatgaagtcaattttaaccaaattggtaaaatca

.

aaatcaaaataaattaagtgtattaattatTTTTgttgattgcaacaacttgattgtaag

 ccttttaggtccactatggaatgtaattaaatcaaaactaaacctagttgctctaaaact

 aacgattaagacaaaaattaaacaccttcacaatataccctccatgag

Exon 26 | Start: 187704 | End: 187751 | Length: 47

.
 ctagtgaaactcacatggatatgaagtcaattttaaccaaaggtaaaatcaaatcaaa

 ataaattaagtgtattaattatTTTTgttgattgcaacaacttgattgtaagccttttag

 gtccactatggaatgtaattaaatcaaaactaaacctagttgctctaaaactaacgatta

 agacaaaaattaaacaccttcacaatataccctccatgaggcacaccacctgcattcagg

 aaaagtggtgatgagatgtggtacaagcattccatgggcaacttctctgtttcttttcaga
 |3121 |3131 |3141 |3151 |3161 . .
 AGTGCAACCAGCAACAATTCCACCGTGGCTTGCAATTGATAGAAATGGGgtatgtatgaac
 S A T S N N S T V A C I D R N G
 |1041 |1051

 accttataagccagaatttacagctctccactatggctctatTTTtacatggaaaatgcct

 taacctaaataattttaaccagataatcttgagttttcttctgtgtgggtttttccct

 gcacggctgtcacgcctcacagtgccgttcaaagcgtgactcctggaccagtagtagcat

 cgctggccttggttagaaacgccatttttcaggccactgccccagtttgaccaaatacagg

.
tgaagcaaatacacggacatacacatctgtgtgtgtgagtgttcattgatg

Exon 28 | Start: 191225 | End: 193307 | Length: 2082

.
cacatcacacatatatgtatacatgcatacacatacacacacacatacacacactctcct

.
caaggcagtttatcctctgagaactttaatttacaaaagacacatatgtccattacttt

.
gagaaggacaggaaagaaccactttcttttgacagcaacagcaagaggccctcccagg

.
ctcctgctccctgtcataagtctccttggtgaggacattcacagggttcagaaccagg

.
atcctgcatgggatggctgtgattacttcacctctgatttctttccactttcaga

3281	3291	3301	3311	3321	3331
AATACATAAACCAGTCCGTTCCCAAAGGCCCGCTGGCTCTGTGCAGAATCCTGTCTATC					
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	3391
ACAATCAGCCTCTGAACCCCGCGCCAGCAGAGACCCACACTACCAGGACCCCAACAGCA					
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	3451
CTGCAGTGGGCAACCCCGAGTATCTCAAACTGTCCAGCCACCTGTGTCAACAGCACAT					
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	3511
TCGACAGCCCTGCCCCACTGGGCCCAGAAAGGCAGCCACCAAATTAGCCTGGACAACCTG					
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	3571
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 |3631
CAGCTGAAAATGCAGAATACCTAAGGGTCGCGCCACAAAGCAGTGAATTTATTGGAGCAT
A E N A E Y L R V A P Q S S E F I G A *
|1201 |1211

|+1 |+11 |+21 |+31 |+41 |+51
GACCACGGAGGATAGTATGAGCCCTAAAAATCCAGACTCTTCGATACCCAGGACCAAGC

|+61 |+71 |+81 |+91 |+101 |+111
CAGCAGAGTCTCTCCATCCCAACAGCCATGCCCAGATTAGCTCTTAGACCCACAGACTGG

|+121 |+131 |+141 |+151 |+161 |+171
TTTTGCAACGTTTACACCGACTAGCCAGGAAGTACTTCCACCTCGGGCACATTTTGGGAA

|+181 |+191 |+201 |+211 |+221 |+231
GTTGCATTCTTTGTCTTCAAAGTGAAGCATTTACAGAAACGCATCCAGCAAGAATAT

|+241 |+251 |+261 |+271 |+281 |+291
TGTCCCTTTGAGCAGAAATTTATCTTTCAAAGAGGTATATTTGAAAAAAAAAAAAAGTAT

|+301 |+311 |+321 |+331 |+341 |+351
ATGTGAGGATTTTTATTGATTGGGATCTTGAGTTTTTTCATTGTCGCTATTGATTTTA

|+361 |+371 |+381 |+391 |+401 |+411
CTTCAATGGGCTCTTCCAACAAGGAAGAAGCTTGCTGGTAGCACTTGCTACCCTGAGTTC

|+421 |+431 |+441 |+451 |+461 |+471
ATCCAGGCCCAACTGTGAGCAAGGAGCACAAGCCACAAGTCTTCCAGAGGATGCTTGATT

|+481 |+491 |+501 |+511 |+521 |+531
CCAGTGGTTCTGCTTCAAGGCTTCCACTGCAAAACACTAAAGATCCAAGAAGGCCTTCAT

|+541 |+551 |+561 |+571 |+581 |+591
GGCCCCAGCAGGCCGATCGGTACTGTATCAAGTCATGGCAGGTACAGTAGGATAAGCCA

|+601 |+611 |+621 |+631 |+641 |+651
CTCTGTCCCTTCTGGGCAAAGAAGAAACGGAGGGGATGGAATTCTTCCTTAGACTTACT

|+661 |+671 |+681 |+691 |+701 |+711
TTTGTA AAAATGTCCCCACGGTACTTACTCCCCACTGATGGACCAGTGGTTTCCAGTCAT

|+721 |+731 |+741 |+751 |+761 |+771
 GAGCGTTAGACTGACTTGTGTTGTCTCCATTCCATTGTTTTGAAACTCAGTATGCTGCCC

 |+781 |+791 |+801 |+811 |+821 |+831
 CTGTCTTGCTGTGCATGAAATCAGCAAGAGAGGATGACACATCAAATAATAACTCGGATTC

 |+841 |+851 |+861 |+871 |+881 |+891
 CAGCCCACATTGGATTCATCAGCATTTGGACCAATAGCCCACAGCTGAGAATGTGGAATA

 |+901 |+911 |+921 |+931 |+941 |+951
 CCTAAGGATAGCACCCTTTTGTTCGCAAAAACGTATCTCCTAATTTGAGGCTCAGAT

 |+961 |+971 |+981 |+991 |+1001 |+1011
 GAAATGCATCAGGTCCTTTGGGGCATAGATCAGAAGACTACAAAAATGAAGCTGCTCTGA

 |+1021 |+1031 |+1041 |+1051 |+1061 |+1071
 AATCTCCTTTAGCCATCACCCCAACCCCCAAAATTAGTTTGTGTTACTTATGGAAGATA

 |+1081 |+1091 |+1101 |+1111 |+1121 |+1131
 GTTTTCTCCTTTTACTTCACTTCAAAAGCTTTTACTCAAAGAGTATATGTTCCCTCCAG

 |+1141 |+1151 |+1161 |+1171 |+1181 |+1191
 GTCAGCTGCCCCAAACCCCTCCTTACGCTTTGTACACAAAAAGTGTCTCTGCCTTGA

 |+1201 |+1211 |+1221 |+1231 |+1241 |+1251
 GTCATCTATTCAAGCACTTACAGCTCTGGCCACAACAGGGCATTTTACAGGTGCGAATGA

 |+1261 |+1271 |+1281 |+1291 |+1301 |+1311
 CAGTAGCATTATGAGTAGTGGAATTCAGGTAGTAAATATGAAACTAGGTTTGAATTT

 |+1321 |+1331 |+1341 |+1351 |+1361 |+1371
 GATAATGCTTTCACAACATTTGCAGATGTTTTAGAAAGAAAAAAGTTCCTTCCTAAAAATA

 |+1381 |+1391 |+1401 |+1411 |+1421 |+1431
 ATTTCTCTACAATTGGAAGATTGGAAGATTCAGCTAGTTAGGAGCCCACCTTTTTTCCTA

 |+1441 |+1451 |+1461 |+1471 |+1481 |+1491
 ATCTGTGTGTGCCCTGTAACCTGACTGGTTAACAGCAGTCCTTTGTAAACAGTGTTTTAA

 |+1501 |+1511 |+1521 |+1531 |+1541 |+1551
 ACTCTCCTAGTCAATATCCACCCCATCCAATTTATCAAGGAAGAAATGGTTCAGAAAAATA

 |+1561 |+1571 |+1581 |+1591 |+1601 |+1611
 TTTTCAGCCTACAGTTATGTTTCAGTCACACACATACAAAATGTTTCCTTTTGCTTTTAA

 |+1621 |+1631 |+1641 |+1651 |+1661 |+1671

AGTAATTTTGGACTCCCAGATCAGTCAGAGCCCCTACAGCATTGTTAAGAAAAGTATTTGA

 |+1681 |+1691 |+1701 |+1711 |+1721 . .
TTTTTGTCTCAATGAAAATAAACTATATTTCATTCCACTCTAttatgctctcaaatacc

cctaagcatctatactagcctgggtatgggtatgaaagatacaaagataaataaaacatag

tccctgattctaagaaattcacatatttagcaaaggaaatggactcatagatgctaacctt

aaaacaacgtgacaaatgccagacaggacccatcagccaggcactgtgagagcacagagc

agggaggttgggtcctgcctgaggagacctggaaggaggcctcacaggaggatgaccag

gtctcagtcagcggggaggtggaaagtgcaggtgcatcagggg