

Gene: LEPRE1 - Sequence: NG_008123.1
Transcript: NM_022356.3 - Protein: NP_071751.3
Date : February 12, 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: 5578 | Length: 577

```

. . . . .
ggcctgcagctggcggcgctccttgccctttcaaggacccccctcggtccgccccggcgcg

. . . . .
cggcgtcctccatgacagcgcccttatcctccccactccctgggctgtgcgagtaggaaga

. . . . .
gcctgcgcataaaggcgctgggcggagcttcctcgtctttctgtctactgggcgtcagtt

. . . . .
cgactgagcaaggcctgagctcggaggcgggctccggctgacgcgccgggattcgctga

. . . . .
gggccggtgggggatccgggctgactgaaaggaaaagaggcgggtgcaagcctcgtgggc

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

|-49      |-39      |-29      |-19      |-9       |1
GACTCCGGCCTTGGTGGCGGGTGGCTGGCGGTTCGTTAGGTCTGAGGGAGCGATGGCGG
                                     M A V
                                     |1

|11      |21      |31      |41      |51      |61
TACGCGCGTTGAAGCTGCTGACCACACTGCTGGCTGTCGTGGCCGCTGCCTCCCAAGCCG
R A L K L L T T L L A V V A A A S Q A E
                        |11                        |21

|71      |81      |91      |101     |111     |121
AGGTCGAGTCCGAGGCAGGATGGGGCATGGTGACGCCTGATCTGCTCTTCGCCGAGGGGA
V E S E A G W G M V T P D L L F A E G T

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|31 |41
 |131 |141 |151 |161 |171 |181
 CCGCAGCCTACGCGCGGGGACTGGCCCCGGGTGGTCCTGAGCATGGAACGGGCGCTGC
 A A Y A R G D W P G V V L S M E R A L R
 |51 |61
 |191 |201 |211 |221 |231 |241
 GCTCCCGGGCAGCCCTCCGCGCCCTTCGCCTGCGCTGCCGCACCCAGTGTGCCGCCGACT
 S R A A L R A L R L R C R T Q C A A D F
 |71 |81
 |251 |261 |271 |281 |291 |301
 TCCCGTGGGAGCTGGACCCGACTGGTCCCCAGCCCGCCAGGCCTCGGGCGCCCGCG
 P W E L D P D W S P S P A Q A S G A A A
 |91 |101
 |311 |321 |331 |341 |351 |361
 CCCTGCGCGACCTGAGCTTCTTCGGGGGCCTTCTGCGTCGCGCTGCCTGCCTGCGCCGCT
 L R D L S F F G G L L R R A A C L R R C
 |111 |121
 |371 |381 |391 |401 |411 |421
 GCCTCGGGCCGCCGCGCCCACTCGCTCAGCGAAGAGATGGAGCTGGAGTTCGCCAAGC
 L G P P A A H S L S E E M E L E F R K R
 |131 |141
 |431 |441 |451 |461
 GGAGCCCTACAACCTACCTGCAGTTCGCTACTTCAAGgtgcagacctgcctggaaccag
 S P Y N Y L Q V A Y F K
 |151

 gcggccggggtccttctggggagaggagtgttgacggggacctgaggagcttgggggatc

 ggggaagtgtccgcaggaggaggaaagtggcctcctggctggggagctctcctcggagcc

 ggggagagctgctccctggcaggagaccttcctcgcccagttcgcatgggcagatgctaa

 ccccaaaggtccagcctggggttagggcacaggccaagcaaaactcatggccattttgtt

 ccctgggaaatctcctggaaggaattaaagcggcagtt

Exon 2 | Start: 9610 | End: 9762 | Length: 152

```
. . . . .
agcactccccatacaatatgacctttgttttaaaatggaacattgctacttcctgtaatc

. . . . .
tggggaaccacctaaatctgacttgggaaagagctacaaatctgccagggcactatgctc

. . . . .
ctaactctgtcgtgggtagttcctgcaataggtgtgcttcctggggctggcaggggctggg

. . . . .
cacgctgagtggagggtcagggaggcagggatttcctgtttatgtggactgctcatgtg

. . . . .
gacacaaacgttcagagattggatgtgagcattatccaccttctcatgcttcattcttag

      |471      |481      |491      |501      |511      |521
ATCAACAAGTTGGAGAAAGCTGTTGCTGCAGCACACACCTTCTTCGTGGGCAATCCTGAG
I  N  K  L  E  K  A  V  A  A  A  H  T  F  F  V  G  N  P  E
                        |161                        |171

      |531      |541      |551      |561      |571      |581
CACATGGAAATGCAGCAGAACCTAGACTATTACCAAACCATGTCTGGAGTGAAGGAGGCC
H  M  E  M  Q  Q  N  L  D  Y  Y  Q  T  M  S  G  V  K  E  A
                        |181                        |191

      |591      |601      |611      . . . . .
GACTTCAAGGATCTTGAGACTCAACCCCATATGgtgaaaaaaactttatccccttctttc
D  F  K  D  L  E  T  Q  P  H  M
                        |201

. . . . .
tttctttctttttaaatatttttagagacagagtcttgctctgtcaccagggtggagt

. . . . .
gcagtggcttgatcatagctcactgtaacctcaaattcccggactcaagagaccctctag

. . . . .
tctcggcctcctgagtagttgggactacaggcatgcattcttttgttttttttaaatga
```

.
cattactaaggttggttttctaattacattacagaagtaatgaatgttcattgtataacat

.
tgtagaaatgtaggtaagtataaaaataaaaagt

Exon 3 | Start: 12695 | End: 12884 | Length: 189
BE AWARE: This section overlaps with the following exon

.
acccaggaggtggaggttgagtgagctgagattgtgccactgcagtcagcctgggcaa

.
cagagtgagactctgtctcaaaaaagaaaaagagctaaatgtttttaattccaga

.
gctaaatattttgtaaagaccatttacaagccttcattttatagtggtagccaggtc

.
acccctttccatccataacctgaggaacaggaaattaggaccctgtgaaggtggctgag

.
ggcaaggagagaggggttcctcctctgtggcctgcatttgagtgcctccttctccagtag

621	631	641	651	661	671
CAAGAATTCGACTGGGAGTGCGACTCTACTCAGAGGAACAGCCACAGGAAGCTGTGCCC					
Q E F R L G V R L Y S E E Q P Q E A V P					
	211			221	

681	691	701	711	721	731
CACCTAGAGGCGGCGCTGCAAGAATACTTTGTGGCCTATGAGGAGTGCCGTGCCCTCTGC					
H L E A A L Q E Y F V A Y E E C R A L C					
	231			241	

741	751	761	771	781	791
GAAGGGCCCTATGACTACGATGGCTACAACCTTGAGTACAACGCTGACCTCTTCCAG					
E G P Y D Y D G Y N Y L E Y N A D L F Q					
	251			261	

801
GCCATCACAGgtgctgaggttcagagccagaccttcagccaggcctcctgggactctaa	
A I T D	

.
 ggtcaccatctgataataataaatggggactcttcaccctcattcctcaatttattaaatc

 tgagaagctgatgaaaaattgcttccatttgaatttggtcatcttaaccagaatttgagt

 tctaaagagtgcctcatagttattccttctgtttgattcctttcagatcattacatcca

 ggtcctcaactgtaagcagaactgtgtcacggagcttgcttccaccaagtgcgagagaa
 . .
 gccctttgaa

Exon 4 | Start: 13102 | End: 13233 | Length: 131

.
 ccgtgccctctgcgaagggccctatgactacgatggctacaactaccttgagtacaacgc

 tgacctcttccaggccatcacaggtgcgtgcagttcagagccagacctcagccaggcct

 cctgggactctaaggtcaccatctgataataataaatggggactcttcaccctcattcctc

 aatttattaaatctgagaagctgatgaaaaattgcttccatttgaatttggtcatcttaa

 ccagaatttgagttctaaagagtgcctcatagttattccttctgtttgattcctttcag

811	821	831	841	851	861
ATCATTACATCCAGGTCCTCAACTGTAAGCAGAACTGTGTACGGAGCTTGCTTCCACCC					
H Y I Q V L N C K Q N C V T E L A S H P					
271			281		

871	881	891	901	911	921
CAAGTCGAGAGAAGCCCTTTGAAGACTTCCTCCCATCGCATTATAATTATCTGCAGTTTG					
S R E K P F E D F L P S H Y N Y L Q F A					

|291 |301

|931
CCTACTATAACAgtaaggcctacttttccttcctctttctctgctggctaactaagaagct
Y Y N I
|311

.
aaaggcaaggtgggcagggattacagccacttacttcctcaaggtgtttggcttatttca
.
gtagctatgggaggcaccatgcccaagtgatccctgggtagtttggtataaacaactggcc
.
taggaagccaataaccagcaacccaaaaagctgggggaggagacttaggacctcatctct
.
tgtcccttctataacttgtaatctatttttgcttttgaattaaagttaatagcaaaataa
.
gggtatgccaca

Exon 5 | Start: 14163 | End: 14302 | Length: 139

.
attatttgtgaatcttaaaagatgtgggcatgcagagaattctgattcttttctgtttca
.
ttgttaggcagccctgaggacattgaccacctcaccttaaaattaatcacacattctatg
.
tgtattacttaactcctgcccctgaaatcaggccatcatgttaagtagcaggcaccagct
.
tgtcatgctgccattgcctcaagctttgtggagactgaacactaagtggtcacctgtgct
.
aggattttatcctttccttttgactctttcctctcagccattcttctttccactttgcag

|941 |951 |961 |971 |981 |991
TTGGGAATTATACACAGGCTGTTGAATGTGCCAAGACCTATCTTCTTCTTCCCCAATG
G N Y T Q A V E C A K T Y L L F F P N D


```

. . . . .
tcccagaggttaaaagacagggctgagttctgggggatttgtttgctttttaccctcag

|1081      |1091      |1101      |1111      |1121      |1131
AGTGCCAAGGAGTACCGACAGCGAAGCCTACTGAAAAAGAACTGCTTTTCTTCGCTTAT
S A K E Y R Q R S L L E K E L L F F A Y
|361                                |371

|1141      |1151      |1161      . . . . .
GATGTTTTTGGGAATCCCTTTGTGGATCCGgtgagctagggtacaggagccggaagggag
D V F G I P F V D P
|381

. . . . .
cggggaaagagtgagcaggagagatgaatggggaggagggggaactgtgcgattctgag

. . . . .
agaaaacttgctggaggctgagcctagcctgggatctgtgcaaggcagggatgagagaca

. . . . .
gatgaaaggggaactgggcagctagaagggacttagatgtggaacctcccattttgt

. . . . .
ctcctgaaaggaagaggggtgataagctggattactcctgtgggccttatatttatgcattg

. . . . .
agacacctggaagattaagtagatcatctt

```

Exon 7 | Start: 16868 | End: 16920 | Length: 52
BE AWARE: This section overlaps with the following exon

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. . . . .
cggggaaagagtgagcaggagagatgaatggggaggagggggaactgtgcgattctgag

. . . . .
agaaaacttgctggaggctgagcctagcctgggatctgtgcaaggcagggatgagagaca

. . . . .
gatgaaaggggaactgggcagctagaagggacttagatgtggaacctcccattttgt

. . . . .
ctcctgaaaggaagaggggtgataagctggattactcctgtgggccttatatttatgcattg

```


.
agacacctggaagattaagtagatcatcttacctttttcatttcttcctgacctacttag

|1171 |1181 |1191 |1201 |1211 |1221 .
GATTCATGGA CTCCAGAAGAAGTGATTCCCAAGAGATTGCAAGAGAAACAGAAgtgagga
D S W T P E E V I P K R L Q E K Q K
|391 |401

.
ccttgaagaaactgcatgggttgatcagtcctgatgaagcacttgaggcttcctgagccca

.
ggcagatgtgaactcctggcaaggggtgggcaggtccagtttgggaagtcgggggtggagc

.
ccagggctggccctggaatgcagtcctcagagcggctgtgctcataggtcagaacgggaa

.
acagccgtacgcacatctcccaggagattgggaaccttatgaaggaaatcgagacccttggtg

.
gaagagaagaccaaggagtcactggatgtgagcagactgaccgggaaggtga

Exon 8 | Start: 17095 | End: 17216 | Length: 121

.
at tt t t a t g c a t t g a g a c a c c t g g a a g a t t a a g t a g a t c a t c t t a c c t t t t t c a t t t c t t c

.
c t g a c c t a c t t a g g a t t c a t g g a c t c c a g a a g a g t g a t t c c c a a g a g a t t g c a a g a g a a

.
a c a g a a g t g a g g a c c t t g a a g a a c t g c a t g g t t g g a t c a g t c t g a t g a a g c a c t t g a g g

.
c t t c c t g a g c c c a g g c a g a t g t g a a c t c c t g g c a a g g g t g g g c a g g t c c a g t t t g g g a a

.
g t c g g g g t g g a g c c c a g g g c t g g c c c t g g a a t g c a g t c c t c a g a g c g g c t g t g c t c a t a g

|1231 |1241 |1251 |1261 |1271 |1281

GTCAGAACGGGAAACAGCCGTACGCATCTCCCAGGAGATTGGGAACCTTATGAAGGAAAT
S E R E T A V R I S Q E I G N L M K E I
|411 |421
|1291 |1301 |1311 |1321 |1331 |1341
CGAGACCCTTGTGGAAGAGAAGACCAAGGAGTCACTGGATGTGAGCAGACTGACCCGGGA
E T L V E E K T K E S L D V S R L T R E
|431 |441

.
AGgtgagaggacagaaataggggcatgtctggctgttgtcagggagccaggcaggtcacc
G
.
ccacatttgccaggcagcgctccacccagcattgcagagctcacatgagccagccacc
.
cttagggtgcaagttcagtggaacatccttcctaactcaccagcgggactttcagctggaa
.
agagcactgagaatcagcctttggctcagaaatcagactccaggatgtagtggtgcacac
.
ccgtaatcccagctacttggcaggctgaggcaggaggatcgcttgagcccaggagtttga
.
at

Exon 9 | Start: 19421 | End: 19548 | Length: 127
BE AWARE: This section overlaps with the following exon

.
gttcttcctcgttcccagactcatgttttaggattgtgtttctgatgtttcctcaagagt
.
gtgtcatggccaaaagccagcagctatttggatcatggagctgggactgggaatctcatc
.
tttcagctctatgttctgtcctctggactattctacctttgaaaatgacctagcgggaga
.

ttttgctggtgaaaaggaaacagctggaatttctatttgtgacgaggaggcaatatccaa

 tggagagtctttggtctagctgctgctagatttagctagagttttgtcattgctttgcag
 |1351 |1361 |1371 |1381 |1391 |1401
 GTGGCCCCCTGCTGTATGAAGGCATCAGTCTCACCATGAACTCCAACTCCTGAATGGTT
 G P L L Y E G I S L T M N S K L L N G S
 |451 |461
 |1411 |1421 |1431 |1441 |1451 |1461
 CCCAGCGGGTGGTGTATGGACGGCGTAATCTCTGACCACGAGTGTGAGGAGCTGCAGAGAC
 Q R V V M D G V I S D H E C Q E L Q R L
 |471 |481
 |1471
 TGACCAATgtaagggaagcccagtgactgcaccttcccccaagggtccagcatccccca
 T N
 |491

 ccaagtgcccttgggtggtagccttcgccttcctcttctggccacagttgaccacctc

 ttctcaagccctcagctgccctggctaacatcaccttgtgttttgggccttgtaggtggc

 agcaacctcaggagatggctaccggggtcagacctccccacatactccaatgaaaagtt

 ctatggtgtcactgtcttcaaagccctcaaggtaagatcaacactgggcattctagagtg
 . . .
 tggagaaa

Exon 10 | Start: 19716 | End: 19811 | Length: 95

.
 tgcaggtggccccctgctgtatgaaggcatcagtctcacatgaactccaaactcctgaa

 tggttcccagcgggtggtgatggacggcgtaatctctgaccacgagtgctcaggagctgca

```

. . . . .
gagactgaccaatgtaagggaagcccagtgactgcaccttccccaagggtccagcatcc

. . . . .
ccccaccaagtgcccttgggtggtagccttcgccttccttcttctggccacagttgacc

. . . . .
acctcttctcaagccctcagctgccctggctaacatcaccttggttttgggcctttag

      |1481      |1491      |1501      |1511      |1521      |1531
GTGGCAGCAACCTCAGGAGATGGCTACCGGGTCAGACCTCCCCACATACTCCCAATGAA
V  A  A  T  S  G  D  G  Y  R  G  Q  T  S  P  H  T  P  N  E
                        |501                                |511

      |1541      |1551      |1561      . . . . .
AAGTTCTATGGTGTCACTGTCTTCAAAGCCCTCAAGgtaagatcaacactgggcattcta
K  F  Y  G  V  T  V  F  K  A  L  K
                        |521

. . . . .
gagtgtggagaaaggggtggggaagggggaagctcaggctttgaggaagagttggggctg

. . . . .
gtggcaggaaaggtgaagagggtccacctgccaacattcttgttccaggaagcgaggat

. . . . .
gagttatgttgctgaggttcacttttgaatcctgttagaccgagtgtaatcaaaacaaa

. . . . .
gtgagcaggataagactgttcgcaaagctatgagaatgctttctttagaaaggctgatt

. . . . .
ctagagggtgtgcttctgtgcaggatgcacagtgt

```

Exon 11 | Start: 21749 | End: 21899 | Length: 150

```

. . . . .
acgggggtggctggccgggctgaggggctcctcacttcccagtaggggcgggcgggcagag

. . . . .
gcgcccctcacctcccgacgcaaactccatttttttaaagccaccagatctcgtgaga

```

.
 cttattcagttattatgagaacagcacgggaaagatccacccccattattcagtcattctcc

 caccaggtcccttccacaacacatgggaattatgggaactacaagataagatttgggtag

 ggacacagagccaaaccatatcagtcgttgagggcagctgaccatctgtctccttggcag

 |1571 |1581 |1591 |1601 |1611 |1621
 CTGGGGCAAGAAGGCAAAGTTCCTCTGCAGAGTGCCACCTGTACTACAACGTGACGGAG
 L G Q E G K V P L Q S A H L Y Y N V T E
 |531 |541

 |1631 |1641 |1651 |1661 |1671 |1681
 AAGGTGCGGCGCATCATGGAGTCTTCTTCCGCTGGATACGCCCCTCTACTTTTCTTCTAC
 K V R R I M E S Y F R L D T P L Y F S Y
 |551 |561

 |1691 |1701 |1711
 TCTCATCTGGTGTGCCGCACTGCCATCGAAGgtgggcctcattaccctgcagcaccgcg
 S H L V C R T A I E E
 |571

 ccccgcatgctgtacctcagctctgtgctggatgctgaagacacagagagaacaggatgc

 ggtcccttttcttcagttggggaaccaatgtaaatacatgggtggcatcccagtgatg

 catgccacagtagcatggaggaagttatagtcaacctacctggggatcaagaaggcttcc

 cagagggaaatggggtgcagccagaaagggggccacccgtcacttgtcacacaacgcact

 ttaatggggaagctgggtgctaaccattcat

Exon 12 | Start: 23768 | End: 23885 | Length: 117
 BE AWARE: This section overlaps with the following exon


```

. . . . .
tggggctagctgttcccagagtccaatcctttatccccaacccgctggataagaagata
. . . . .
ggcaaagagggaatcatatcgtggtgtgacaagaacggtagtgtagtgggcacagggga
. . . . .
ctctaaggcgagggtgggagagtggaaaggtggagtttgtacggcatcagtataggttctt
. . . . .
aaaggtttccctcccacacaaagccaccctcctgctgctggttgagagcacctggaggtg
. . . . .
aaggctcaggggaaaggaggcaggggaagggccatgatgagatgtctctgcctttccag

|1841      |1851      |1861      |1871      |1881      |1891
CGCCATCCTTTACCTAAATGGGGACTTCGATGGCGGAACTTTTATTTCACTGAACTGGA
A I L Y L N G D F D G G N F Y F T E L D
                        |621                        |631

|1901      |1911      . . . . .
TGCCAAGACCGTGACGgtgagtgctcccttgtccttgtccctgggagataaaaagtctgt
A K T V T

. . . . .
tttctacagctgatgttcccaaagtgagtgacaaaaataaccaactgggcttccagct
. . . . .
gggcggtacccttcccccatccagaggggctttgagacgtgtccatcactcctctaacca
. . . . .
gtcaccctttctctttagttctggtcttagggaagccatactgaagagctgccctcggtc
. . . . .
gtgagccctaataagagcccatgtctcttctgagagtggattacagtctttgtcctgtgcaa
. . . . .
ccccctccctttctg

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Exon 14 | Start: 24673 | End: 24813 | Length: 140
BE AWARE: This section overlaps with the following exon

.
ccttgctccttggtccctgggagataaaaagtctgttttctacagctgatgttcccaaagtg

.
cagtggaacaaaaataaccaactgggcttcccagtgggcggtacccttcccccatccagag

.
gggctttgagacgtgtccatcactcctctaaccagtcaccctttctcttagttctggtc

.
ttagggaagccatactgaagagctgccctcggctcgtgagccctaataagcccagctctct

.
tctgagagtggattacagtctttgtcctgtgcaacccccctccctttctgtcccccttag

 |1921 |1931 |1941 |1951 |1961 |1971
GCAGAGGTGCAGCCTCAGTGTGGAAGAGCCGTGGGATTCTCTTCAGGCACTGAAAACCCA
A E V Q P Q C G R A V G F S S G T E N P
 |641 |651

 |1981 |1991 |2001 |2011 |2021 |2031
CATGGAGTGAAGGCTGTCACCAGGGGGCAGCGCTGTGCCATCGCCCTGTGGTTCACCCTG
H G V K A V T R G Q R C A I A L W F T L
 |661 |671

 |2041 |2051
GACCCTCGACACAGCGAGCGGgtgagagcagctcgagcgggtgagagcagctgggtgctgt
D P R H S E R
 |681

.
ggtgaccggttcccagagcgcccttggtttgctttctcttccccaaatcccattgccag

.
tggctgagacacgaaaggagcacttgggacaccagctccaacgccctgtcattatgggtca

.
cattgccttgctcctccctgggcctgctgtgaacgggatccaggtggggaaagaggtcaag

.
acagggagcgaatgctgagttcttgggtccctccttgggccccacttcagctgtccttttc

.

cagagagtaggacctgctggg

Exon 15 | Start: 25233 | End: 25750 | Length: 517

.
cacttgggacaccagctccaacgccctgtcattatgggtcacattgccttgtcctccctgg

.
gcctgctgtgaacgggatccaggtggggaaagaggtcaagacaggagcgatgctgagtt

.
cttggttccctccttggggcccacttcagctgtccttttccagagagtaggacctgctgg

.
gaaggagatgagcctggggccattaaggaaccttccttgtcccctgggaagtagcagctg

.
agagatagcgagtgtctggagcggaggcctctctgaatgggcaggggtttgtccttgag

2061	2071	2081	2091	2101	2111
GACAGGGTGCAGGCAGATGACCTGGTGAAGATGCTCTTCAGCCCAGAAGAGATGGACCTC					
D R V Q A D D L V K M L F S P E E M D L					
	691			701	

2121	2131	2141	2151	2161	2171
TCCCAGGAGCAGCCCCCTGGATGCCAGCAGGGCCCCCGAACCTGCACAAGAGTCTCTC					
S Q E Q P L D A Q Q G P P E P A Q E S L					
	711			721	

2181	2191	2201	2211	+11	+21
TCAGGCAGTGAATCGAAGCCCAAGGATGAGCTATGACAGCGTCCAGGTCAGACGGATGGG					
S G S E S K P K D E L *					
	731				

+31	+41	+51	+61	+71	+81
TGACTAGACCCATGGAGAGGAACCTTCTGCACTCTGAGCTGGCCAGCCCCTCGGGGCTG					

+91	+101	+111	+121	+131	+141
CAGAGCAGTGAGCCTACATCTGCCACTCAGCCGAGGGGACCCTGCTCAGACCTTCTACA					

+151	+161	+171	+181	+191	+201
TGGTGCTACTGCTCTTGGAGTGGACATGACCAGACACCGACCCCCTGGATCTGGCTGAG					

