

Gene: MFN2 - Sequence: NG_007945.1
Date : January 9, 2015

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

tgctcttctttcctcaaaggcgactgaagggcagcaggcccatgctcgcttctgtctgcc
cgatgagtcacttcaccttaggcctggccctctagagaacactcctctaagattacagaa
tgcaaatctggattccagagctggcagaggccccagggtcaggctctaggacaaccggcg
aaaaagcgggaacctctactccacgcccttggtttttcgcccccttgacagcttgaggctc
cgccccgctttgccccgccccccagctccggccgacgcccaccggaactacagccccca
|-449 |-439 |-429 |-419 |-409 |-399
ATGATGCAGTGGGAGTCCGAGCCTCTGCGTCGTCGCTTGGGACGCGCCGGCGGAGGAGT
|-389 |-379 |-369 |-359 |-349 |-339
GGCGCGCGGAGGAGTGGCGCGCTGAGACGCCGCTCGAAGCGCCGAGTCGCGGGGACAGCAG
|-329 |-319 |-309 |-299 |-289 |-279
AGGCGTAAGGAGTAGGCGGGGCGAGCCGGCTGGGCTCAGGGTCCACCAGCTCACC GGGT
|-269 |-259 |-249 |-239 |-229 |-219
CGAGGGGCAATCTGAGGCGACTGGTGACGCGCTTATCCACTTCCCTCCTCCCGCCTCCCC
|-209 |-199 |-189 |-179 |-169 |-159
CTGGGGTGGCGCTCGCTGGTGACGTAGTGAGTGTGATGGCCCGCGAGGCCGGGAAGGT
|-149
GAAGgtgagagggcgagcaagccggggtggcggggactggcccggcccggccggcgagt
cctgagcagctcggcgtgggcccacgggattctggggccacgggggtctgggatgcagtc
aagcggggtccccactctccggcctcgccggggccctccccggccctgagaggagggg
gcgggccacgggacctgggactggtcggtggggtcccctgtagcttctcatcgccccgc
ctttccacccttcacggccatgttctacccttgccttctctatttttcatcctgtctt
catt

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

```
ctctgtcctcttctcccctctctggatgtacctttccagggtcctgcaggacacccg
tggtgcctcaaaccgcacatggcggaatacgtgtgcacagtcaggattgggtcccacacc
tctgcgtttttttcccagggcacttcctcacatgccagcgcaactccccaatacctcaa
tgagtaagcttcctcagggatgagtttggttgcttgaaacctgattagacatgttttg
tacaccagtgtttttttttttggacaccgatccatctcccttttcttttctaataagt
      |-139      |-129      |-119      |-109      |-99      |-89
TCAGGACTGGTGGAGTCAACACAGTCAATCAATAGCCAACCTCAACCTGAGACAGGACAG
      |-79      |-69      |-59      |-49      |-39      |-29
AAGAGAACTCAGAATCTTTTGTCTTTGGACTTCAGCCATGTCCATGATGCCTACCCTG
      |-19      |-9
TGAAGATCTCTCACCATCCAAAAAgtagtagtagctgtgacttctggcacccctggatt
tgagctgagtggaacaggggtgtgctctcctggacctctggtggcaagtctcttgaatggc
atcctctttgtatagagccacagctttctaacttggttgaaaaactaccgtatctttta
cttccgtgaaggatttcgctggttgcttagagagcctgtttaaagttagacagttcagaa
gtggctgggatctcttgggctccctgaagagttagtctctgtctccctcatttggtctct
gctgtgctggctcttccccatctcg
```

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

```
aattactgtatTTTTtagtagagacgggggtttcacatgttggccaggctgggtctgaac
tcctgacctcaggtgatccacctgcctcaacctcccaaagttctgagattacaggggtga
gccaccgcgccagcctgagacactgttcttatctcaccgtcctttgttctagtctgga
ggttgacagtgcctgagatccccatattcttgattctcccaaagcattccgccatctcc
```

ctagcaggatgtcccgaggtaggtgttgctgggttcgctcacgttagcttctcttgcagc

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

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

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

taagggggcacggctcagccaggcccgctcttacctgtttagatatttagctagtggga
tttgcggtggggaggtatatctctgctcccagggaagtcataaccagatagccttagaa
atgctctgctcttgaaatcatgtggaattggagtctggggagatgaggccaggaagacaa
gggaactgccatttagtaattactttaagaagtccacatgttttgtttcatttaatcatg
aaagataggtgaatcttatccccatctacaaggcaagcaaattgaggtttgagagttgt

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

gttatctccgttttgtgcttaaggaaactaagaccagaaaggttcttttgcttgaggcc
acagagctagaaagtggtagaaccagcttcagaaccaggcagtggtgctcctgagccat
cttcttaaccaccacaccgtggggccaccatagaggatctggagctcagcctgtcggctg
caggggtgccagaggtggactcgtttagggtgaagcagggccggcgctctggcccttcaga
cttgggactgtggaactcctctgaccacgtggtgaccttttcaatccccacctccaga

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

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

301	311
TGGCTTTTTTTGGCCGgtaagtccttgaggcaccaccctttctttcttcctggctagga	
A	F
F	G
R	
101	

gggagggaggcactttgtgcaaggtcacagaacgttccaggcagggacatgcttcagaat
tcattgctttcctcttaatttatattttattttattttgatttttgagacagggttct
ctgtcaccagggtggaagctcattacagcctcgacctccctgggctcaggtgatcctcc
cacctgagcctcctgagcagctgggactgcaggtgcatgccatcaagcctgacttttttt
tttttattttctaatt

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

gacagacagtctctataagtgttgctgagggtggctgtgtgattcaaggggcagacagca
cgcagtgagcctctttagattgatctgaaatgatgaaccaggggcatgtcagaggtttg
ggcctgggggtgtttattcattttaataaacagtcctactctttgtctctcagcactgt
ctgggcactggcaacattgcactgaatagggtttggccttccaggctggtatctgcgtt
gtgaaagtaattcaggtcagatactggtggctttgctgacagctgttacttccttctagg

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

381	391	401	411	421	431
TGGGATTGGCCACACCACCAATTGCTTCCTGCGGGTAGAGGGCACAGATGGCCATGAGGC					
G	I	G	H	T	T
N	C	F	L	R	V
E	G	T	D	G	H
E	A				
131				141	

cttttcagatgggctcaaccaaattcctctggcctcttggctttcctctggagtctggtta
 ctatacctatattatcagtagcctgcagatgtcccagggatggctctgtaaaagataggagg
 gatgctcaaaagttggtgggggaggttctcaatctcagcccagtgccagcatgtgtactg
 ggggt

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

ctgggaggcggaggttgacgtgagccgagatcgtgccattgcactccagcccggcgaca
 gagcaagactctatatccaaaaacaaaacaaaacaaaacactcatttccaggcaa
 tctggaaggataggaaatgggaagtaaaatccgttaatgagggccaggcctgatttctct
 cccgtccctggcttttctcctccatgacctgcctgcctcacaagtcccaggtctgttctca
 gcaggaagaatagggtcctgctctgcctgatgatttggtttaccctgtcacctttagc

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

661	671	681	691	701
TGATGTGTTTGCTGGTGGCCAACTCAGAGTCCACCCTGATGCAGACG	gtaactcctcc			
D	V	F	V	L
V	A	N	S	E
S	T	L	M	Q
T				
221		231		

tctgccttctcccaagctcccagcaccctgggagggcagctgatggggccttggctgt
 caagctcctgctccaccgaggtcttaccctttatctaggaaaagcacttcttcacaagg
 tgagtgagcgtctctcccgccaaacatcttcacctgaacaaccgctgggatgcatctg
 cctcagagcccagtagcatggaggaggttcgtgcttctgtttggcagtttggggaatgca
 accccgaggggagcactgcctgccactggggccacttctgcacccctgg

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

acaagtcacaggtctgttctcagcaggaagaatagggtcctgctctgcctgatgatttg
gtttaccctgtcaccttttagccctggattgatgtcaccacagagctggacagctggat
tgacaagttttgtctggatgctgatgtgtttgtgctggtggccaactcagagtccaccct
gatgcagacggtaactcctcctctgccttctcccaagctcccagcacccctgggcaggc
agctgatggggccttggctgtcaagctcctgctccaccgaggtcttaccctttatctagg

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

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

gtttggcagtttggggaatgcaaccccgaggagcactgcctgccactggggccacttcc
tgcaccctggatctagtgacttcctgaattaattttattgccaaagaattctccaaat
actcttctgtggtatcttctggtggtctttcccctctcccatccactttgctggatgcac
cccctcttcaagccactctcccctaggcctaataaaggatccctgctgcattagtgcatct
tcagtgccggtgctcagtttggtttctgaggaattaatacagaacagg

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

ccaggttcaagtattctcctgcctcagcctcctgagtagctgggattacaggcgcctgc
caccatgcctggctaattttttgtatttttagtagagacagggtttcaccatggtggcc
aggctggtcttgaactcccgacctcaagtgatccacctgccttggttcccaaagtgctg
ggattacaggcgtcagccaccatgcccagcctcttatgacctattcttttaataaaaagag

gcaggtgggggctgtggggccacctacactcactctggacacatttgtttgggctccagg

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

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

941	951	961
AGGATTCCAGAAAGCCCAGGGCATGCCTGAAGGAGgtaatgatgagaacagatgtcctcct		
R I Q K A Q G M P E G G		
	321	

tttctctgatgtttgagacattttgtctcgtgctgaggagtctgtcagtagaaaaatcctt
ctgagaaggggatgctgagaagagcagagaggctcttgctcttttagccagtggcttggtt
tctggggatttcatcggttttcctctgctgccaagttgtttctggactaatgcagtacaat
cctcctagggggcgctctcgcagaaggctttcaagtgaggatgtttgagtttcagaattt
tgagaggagatttgaggtgagtcctctgattctg

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

caggccggggaccgcatcttctttgtgtctgctaaggaggtgctcaacgccaggattcag
aaagcccagggcagcctgaaggaggtaatgatgagaacagatgtcctccttttctctga
tgtttgagacattttgtctcgtgctgaggagtctgtcagtagaaaaatccttctgagaagg
ggatgctgagaagagcagagaggctcttgctcttttagccagtggcttggtttctggggat
ttcatcggttttcctctgctgccaagttgtttctggactaatgcagtacaatcctcctagg

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

|1031
GATTGAGgtgagtcctctgattctggtatctggcgattctgtgcctcccagctcccat
F E

tggctgtgtccctggcagtgaaaaccagagtctggcccttggttgtaggcccctggtggc
ccccacctccctccgtgcctctgtgtgttccaggagtgcattctccagctctgcagtgaag
accaagtttgagcagcacacggtccgggccaagcagattgcagaggcggttcgactcatc
atggactccctgcacatggcggctcgggagcagcagtaagagtccaagactgcagatagg
tggagaga

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

ttagccagtggttggtttctggggatttcattcgttttcctctgctgccaagttgtttct
ggactaatgcagtacaatcctcctagggggcgctctcgagaaggctttcaagtgaggat
gtttgagtttcagaattttgagaggagatttgaggtgagtcctctgattctggtatctgg
cgattctgtgcctcccagctccattggctgtgtccctggcagtgaaaaccagagtctg
gcccttggttgtaggcccctggtggccccccacctccctccgtgcctctgtgtgttccagg

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

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

CAgtaagagtccaagactgcagataggtggagagagctgccgagacaagggtgctccacc
Q

cctgccttgggcagtttaggacacgccttgatggcagggctgagtctctgggctcccatcc
agagccctttccctggccaccagaccatgttagaaccacatagacagcctggtgaggagg
gcggctgggtgcttcatcaccacacctgggtctgtgcagcacgattccctgtgttgagggt
cttggcccatgccctgctgagctctgcagccattctcagagcctgaacacatttttcaaa
ac

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

ttactagtgaggttgagctttttccctatattaattggcagaatttgtttaaacccct
taaagcgcctccctgttttgtgccaccacctgaccacatcgaagactgaagagtgca
tggttggctgcagggctcctcttcttacctgggaaggggaaggccatgccctgggtgcgt
gtgtgcagccctgccaggcaagatagcgggcagggcggcgtgggatttctggcatcccct
cttgctcctctgcttagtcagacaggaacatggatttctcaccagtactctgctttcagg

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

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

|1281
GAGGCAGgtgagaaatgaggaggaggcattctgggaagatttgactccgagtagagtcc
R Q

agaagaaagcagacctcctcctcttagggacttctcagcctttcagaagaaagttgtggc
cctgtttcaagaatacagagctgccgtttgggttccattgtcgggttggtgatgctggg
catgttccctttcctctggacctccacagatcatgtgggcgtttgatcagccagtttccc

agaccctctcacttcagaggctttaattccatagaggagctgaggaggctgctggtttga
gaggaag

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

cctttcagaagaaagttgtggccctgtttcaagaatacagagctgccgtttgggttccat
tgtcgggttgtgtgatgctgggcatgttcctttcctctggacctccacagatcatgtgg
gcgtttgatcagccagtttccagaccctctcacttcagaggctttaattccatagagga
gctgaggaggctgctggtttgagaggaaggatgtgccatctgctaggatctctcctggtg
ctgcaggagtgaactttggtcttccttgataacttaacagtgcttccttttgctgtagg

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

1351	1361	1371	1381	1391
ATGGA CTTCACCCCTTCTCCAGTAGTCCTCAAGGTTTATAAGAATgtgagtcatggagca				
M D F H P S P V V L K V Y K N				
451			461	

acaggctcctcttggcaggaggccccaaaagtgattcaaccctgttggtctgggtcagg
gccccccagcagtgacagtagaagccacagagacaaggcccaggcttccgtcagccttct
ggggtcacctggtggatgtggcctgaagggaatttgatggacatgcttctcttaacttc
cctcttctggtggcaggagctgcaccgccacatagaggaaggactgggtcgaaacatgtc
tgaccgctgctccacggccatcaccaactccctgcagaccatgca

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

cgaggagatcaggcgcctctctgtactgggtggacgattaccagatggacttccacccttc

tccagtagtcctcaaggtttataagaatgtgagtcattggagcaacaggtcctcttggcag
gaggccccaaaagtgattcaaccctgttggtctgggtcagggccccccagcagtgaca
gtagaagccacagagacaaggcccaggcttccgtcagccttctggggtcacctgggtgat
gtggcctgaagggaattttgatggacatgcttctcttaacttccctcttctgggtggcagg

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

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

actgggcagctgtggccctgggctgccccaaagatcagatgcggaggccaagctaagaaa
tcaggactttccttatctgtcacttttcatgatgattcaactcgataccttcaggttctg
ggtagatgttctgaactcattcttgcttttgagacagagtcgcactccgtaaccc
aggctggagtgagtgcatgatcttggtcactgcaacctctgccaccgaggttcaagc
gattcttctgctccagcgtcccagtagctgcgactacaggcg

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

ggagcccatcttgttctactacatgggtctaccctaggctgagaattgggcctgctcctt
taagtccacgtgaggcataagtgttagcagtatggcatctgagtcacacttgccctggga
gagctggcctcaagtgaggcatgctcagtcctcacgggccaacttgactgggggtgtggttc
ccaggcaaagctgttcagcatccctggcagtagctggtagagccctgtctccaaggcttg
gtgccgctgtggtgcagggtgagctgataagcttttctccatttcttctcctgacaga

1501	1511	1521	1531	1541	1551
ATGGCTTGAAACCCCTCCTTCCTGTGTCTGTGCGGAGTCAGATAGACATGCTGGTCCAC					
G L K P L L P V S V R S Q I D M L V P R					

501		511
1561	1571	1581
1591	1601	1611
GCCAGTGTCTTCTCCCTCAACTATGACCTAAACTGTGACAAGCTGTGTGCTGACTTCCAGG		
Q	C	F
S	L	N
Y	D	L
N	C	D
K	L	C
A	D	F
Q	E	
521		531
1621	1631	1641
1651	1661	1671
AAGACATTGAGTTCCATTTCTCTCTCGGATGGACCATGCTGGTGAATAGGTTCTGGGCC		
D	I	E
F	H	F
S	L	G
W	T	M
L	V	N
R	F	L
G	P	
541		551
1681	1691	1701
1711		
CCAAGAACAGCCGTCGGGCCTTGATGGGCTACAATGACCAGgcaagcaaagttcctcacc		
K	N	S
R	R	A
L	M	G
Y	N	D
Q		
561		571

tcaagggcattgtggggggtcagtcctgtaccctgcctccagacacgggaaccattctaaa
acgggggttcctaaggtcagcagctgtgggtgtgtgccccaccacacagtacaccacag
acagaatttttgctactgattgacctggattgttctaagcagtgatatttgtgaaatga
cagatgctagtagtttttctctaatacacattaaagtaagtatgtaactattaaaaataga
cgactttaaaaataaccacctacatacgactattttaaagt

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

ttaaaaacattcatctctaaaccacttgagttgtcacatgtactgccctctgtacacatc
ccacactcggggaagctgccaggcgggtcaggatggctcctgctcacattttgacgtcc
cgtgggtgctcacctgagggtctcctctgctacatctgaagctagttgtcccctttttgcc
ttttggaaattgaagagccactctgtgtccctgttccccagactagggaacactgaggg
ttcacgtgaatgagagactcaatacgtccccctcaccctctcatgtttctctcctcagg

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

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

1841	1851	1861	1871
AGGACCTCCATGGGCATTCTTGTGTTGGAGGAGTGgtcagtgaccagttctgctcgggga			
R T S M G I L V V G G V			
		621	

aggtggggcgaggaggcaggtgggcggggcctgagggctaggttcctgctgtggcccctg
cattgggccacactccacagtccactgcatactttctcctctgtgattgcatggggagcg
cttactccctcaccaagtttccctcacttcctgctggacatgggtcccagaccttctggcc
tcggtgggatcaaaggagacattgaaagaggaactcagagtagaaacatgaaggctcctt
ggctggggcccttcagatggccctggtagtgatggg

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

gctaggttcctgctgtggcccctgcattggggccacactccacagtccactgcatactttc
tcctctgtgattgcatggggagcgcttactccctcaccaagtttccctcacttcctgctg
gacatgggtcccagaccttctggcctcggtgggatcaaaggagacattgaaagaggaactc
agagtagaaacatgaaggctccttggctggggcccttcagatggccctggtagtgatggg
ccccagaggagggtggggccacagagaggctgcactccaggctgaccatgtgctctgcagg

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

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

	2001	2011	2021	2031	2041	2051														
	TTTGTGGAGCATGCCAGCGAGAAGCTGCAGCTTGTTCATCAGCTACACTGGCTCCAACTGC																			
	F	V	E	H	A	S	E	K	L	Q	L	V	I	S	Y	T	G	S	N	C
										671										681

	2061
	AGCCACCAAGTCCAGCAgtgagtggccctgtcggaccccagcaggggacttcctttaggc
	S H Q V Q Q

agggtcagccccatctcccttccccatctctcttcccacgtggcctggaagccactgggt
cctaagcatcgtagaccctgggccttcaggtgtgcagggccagctttgaggccagtcagt
gggagaggggtctcccagggaactttgcgtcttgggctgggacggggtaggcctctggg
ccccttggtgaggaagaaatgggaaggcaagagatattcctagtaggagtttagaggtt
gccttgaagagcttggg

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

gacgtgtcctctgctactcggctgatgagcagcagagtcaggatctcttgtgccccaaacc
agggtgcacagctctgtgctgttgcttctcaggccgtgggtgatgctgagtgtgtttgggt
gttatgattattcagtcctcagcagggtgtaggagattctgccaaccaggcctggctcag
ggcagagctgctggcagggatatagacaggcccagctgctccctactgtgggtgggctaa
gccaccagtggcatcttgctccacacaccccaactgggtcccttctctctcctccccagg

	2071	2081	2091	2101	2111	2121														
	GGAAGTGTCTGGGACCTTTGCTCATCTGTGTCAGCAAGTTGACGTCACCCGGGAGAACCT																			
	E	L	S	G	T	F	A	H	L	C	Q	Q	V	D	V	T	R	E	N	L
	691										701									

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

2191	2201
------	------

AGCAAAGCTGCTCAGgtgaggctggcccggtgtggccaaaggttagggctccagggtgcag
 A K L L R
 |731

cccaggcacactggggctcagctgctgggcttgcgtcttgggtgtggacacaaatttttc
 tgggtggggatttagctcattcgtgttagatgtgtaccatgggctgggcacgggtggctgac
 gcctataatcccagcactttgggaggctgaggcaggtagatcacctgaggtcaggagttt
 gagactagcctgaccaacatggtgaaaccccgctcttactaaaaatacaaagattagctg
 gtcgtggtggtgtgt

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

gggaaactgagttcccgacagctcagggaacttgcacatggtcctgggtgaaggaaacaca
 gggcttgagaatcagaaaagcctaacttgttagctccctggcttattagccgtgtggcctt
 gggaagtattttaacccctctgggcctccttttcccatctgtgagacagggataaacac
 gattgttggaggatgatgtaagggtgtgtgtcaagcgtccttaggatggtgcctggcggg
 tagtcctaataactgcctatcatcagctatcatggttacaaaagaaccatttctttgcagg

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

2271	+11	+21	+31	+41	+51
CAGCAGATAGTGGGCACCTGAGGCGGAGTCTGCGTGGAGAGGGGCGGTGCTGCCAGCCCT					
S	R	*			

+61	+71	+81	+91	+101	+111
AAGTGCCATGTGGGCTCCCCAGGGGCACGTGTGGCTCCTGCCCCCTGGCCACTGCCAAG					

+121	+131	+141	+151	+161	+171
AGAATGAAGCACCCAGTCTCGTACCATTTTGAGCCCTCCAGCACTACTTATTTTCCCCCA					

+181	+191	+201	+211	+221	+231
------	------	------	------	------	------

CCTTTGCCTGCTGTTGCTGGAAGAGCTGGCTCATACCCCCAAAGGACACTTTCAGCGACA

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

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

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

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

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

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

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

 |+661 |+671 |+681 |+691 |+701 |+711
GCTCAGAGGGGAGGGCTGTTGGATGTATGGGGAGCTGGCAGAGCAGGTGGCAGTCACTGG

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

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

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

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

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

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

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

|+1141 |+1151 |+1161 |+1171 |+1181 |+1191
 CCTCCCTGATCTCCAGAACCTTCGACTGACCCCTTGTCTTTATGCTGATGTTGAGTTT
 |+1201 |+1211 |+1221 |+1231 |+1241 |+1251
 GGGATTGTTACTGGTTGAAGTGGGGCAGATGCCTGTCACCAAGGTGTTGACTGTGTGAG
 |+1261 |+1271 |+1281 |+1291 |+1301 |+1311
 AAAAGCAGTTTGGGTGACAAATCCTGTGTGGCACAAGTTGGATCGCTTCCTAGAAATAAG
 |+1321 |+1331 |+1341 |+1351 |+1361 |+1371
 CAACACCTCTCCCAAAAAGCAGCCACAAGGCAGGGGCCAGCAGCCAGCCATCACTCA
 |+1381 |+1391 |+1401 |+1411 |+1421 |+1431
 TCTTTGAGGAAATGAGTTGGTAGCCTCTGTGCACTGTTTGGTGGCCACATCACAGGTGAT
 |+1441 |+1451 |+1461 |+1471 |+1481 |+1491
 GTCTGTTCACATACCTGCTTGTATTTAAAGCCCTCAGTCTGTCTGTTGTGTGGGGCGA
 |+1501 |+1511 |+1521 |+1531 |+1541 |+1551
 AGTGATGGACTCTGCCAGGTGGACATGCTGTGGGTGGATGTTCCCGCGTGTGCCGGGCC
 |+1561 |+1571 |+1581 |+1591 |+1601 |+1611
 TGAATGGACAGGGGCCACTTCACAGCATGTCAGGGAAAATCACTGTCACACAATTCCAAT
 |+1621 |+1631 |+1641 |+1651 |+1661 |+1671
 GGATTTTGTGCTCTTTTGAATAAAAAAAAAATTCTTTAGCGTAAACATGAATTTTTTTTCA
 |+1681 |+1691 |+1701 |+1711 |+1721 |+1731
 ATGTAGCCCTGGGGAATGAATGAAATTTTGTAGCTTCTTCAATACGTAAAATTAATTTA
 |+1741 |+1751 |+1761 |+1771 |+1781 |+1791
 TACCACTGAGGGAGAGACCCTTTCTGAAAGAAGTATGGCCAAAAGCACTTTAATGCTGCT
 |+1801 |+1811 |+1821 |+1831 |+1841 |+1851
 GACATTGTTGTTTTTATGTTTCAATTTGCTGGAGCGCAAGACGTGCTGACACAGTGAGTTT
 |+1861 |+1871 |+1881 |+1891 |+1901 |+1911
 CTCTGATGTATTTAAGGTGATGTATTTGCTTGAGTTACTCCTGTATCATTGCTCATAATA
 |+1921 |+1931 |+1941 |+1951
 TTGGAAACTAAAATAAACCTAGTTGGAAATCCTTTGTGAgatctgtctttttgggttct
 tgtacaaactcctctttgacatggccagctgtattctgaagtgaccataactttggggaa
 gttcccactataatctggctccttattcttgggaaggaatttgatactctcaaagaacag

atggtttaactgatctttaaggatcaggaaatcgagactgatttctttacagatttctct
gtaactccagaccatctttcacttaaaaagtaaagactcactgttccatcctgctttgc
cttctgagaatttggttgccactattctttttttttttt