

Gene: BRCA1 - Sequence: NG_005905.2

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: 92501 | End: 92713 | Length: 212

```
. . . . .
tacttatatttaccgaaactggagacctccattagggcggaagagtgggggattgggac

. . . . .
ctcttcttacgactgctttggacaataggtagcgattctgaccttcgtacagcaattact

. . . . .
gtgatgcaataagccgcaactggaagagtagaggctagagggcaggcactttatggcaaa

. . . . .
ctcaggtagaattcttctcttccgtctctttccttttacgtcatccgggggcagactgg

. . . . .
gtggccaatccagagccccgagagacgcttggtcttttctgtccctcccatcctctgatt

|-229      |-219      |-209      |-199      |-189      |-179
GTACCTTGATTTTCGTATTCTGAGAGGCTGCTGCTTAGCGGTAGCCCCTTGGTTTCCGCTG

|-169      |-159      |-149      |-139      |-129      |-119
CAACGGAAAAGCGCGGGAATTACAGATAAATTAAGTAACTGCGACTGCGCGGCGTGAGCTCG

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

|-49       |-39       |-29       |-19      .      .      .      .
TCAGGAGGCCTTCACCCTCTGCTCTGGGTAAAGtagtagagtcccgggaaaggacagg

. . . . .
gggcccgaagtgatgctctgggggtactggcgtgggagagtggatttccgaagctgacagat

. . . . .
gggtattctttgacgggggtaggggcggaacctgagaggcgtaaggcgttgtgaacctt
```

.
 ggggagggggcagttttaggtcgcgaggggaagcgctgaggatcaggaagggggcactg

 agtgtccgtgggggaatcctcgtgataggaactggaatatgccttgagggggacactatg

 tctttaaaacgtcggctgggtcatgaggtcagga

Exon 2 | Start: 93869 | End: 93967 | Length: 98

.
 aggctaccaccacctaccgggtcagtcactcctctgtagctttctctttcttgagaaag

 gaaaagaccaaggggttggcagcaatatgtgaaaaattcagaatttatgttgtctaata

 tacaaaaagcaacttctagaatctttaaaaataaaggacgttgtcattagttctttgggtt

 tgtattattctaaaccttccaaatcttaaattactttattttaaatgataaaatgaa

 gttgtcattttataaaccttttaaaaagatatatatatgtttttctaatgtgttaaag

	| -9	| 1	| 11	| 21	| 31	| 41
TTCATTGGAACAGAAAGAAATGGATT	TATCTGCTCTTCGCGTTGAAGAAGTACAAAAATGT					
		M D L S A L R V E E V Q N V				
		| 1			| 11	
	| 51	| 61	| 71			
CATTAATGCTATGCAGAAAAATCTTAGAGTGTCCCATCTG	gtaagtcagcacaaagagtgt					
I N A M Q K I L E C P I C						
	| 21					

.
 ttaatttgggattcctatgattatctcctatgcaaataaacagaattgaccttacataact

 agggagaagaaagacatgtctagtaagattaggctattgtaattgctgattttcttaactg

.
 aagaactttaaaaatatagaaaatgattccttggttctccatccactctgcctctccact

 cctctccttttcaacacaaatcctgtggtccgggaaagacagggactctgtcttgattgg

 ttctgcactggggcaggaatctagtttagattaactggca

Exon 3 | Start: 102205 | End: 102258 | Length: 53

.
 aattcgtacgaactattatcaactaatcttttaaagtctgatgatagtatagagtattga

 agggatcaatataattctgttttgatatctgaaagctcactgaaggtaaggatcgtattc

 tctgctgtattctcagttcctgacacagcagacatttaataaatattgaacgaacttgag

 gccttatgttgactcagtcataacagctcaaagttgaacttattcactaagaatagcttt

 atttttaataaattattgagcctcatttattttctttttctccccctaccctgctag
 |81 |91 |101 |111 |121 |131 .
 TCTGGAGTTGATCAAGGAACCTGTCTCCACAAAGTGTGACCACATATTTTGCAAgttaagt
 L E L I K E P V S T K C D H I F C K
 |31 |41

.
 ttgaatgtgttatgtggctccattattagcttttgttttgtccttcataaaccaggaaa

 cacctaactttatagaagctttactttcttcaattaagtgagaacgaaaaatccaactcc

 atttcattctttctcagagagtatatagttatcaaaagttggttgtaatcatagttcctg

gtaaagttttgacatatattatctttttttttttttttgagacaaagtctcgctctgtcg

.
cccaggctggagtgagtgaggcatgatcttggtcactgcaacctccgcccccgga

Exon 4 | Start: 111451 | End: 111528 | Length: 77

.
tatgaatataatcattaaatagccatattaacttttattaagttttatgtgatcataaca

.
gtaagccatatgcatgtaagttcagttttcatagatcattgcttatgtagtttaggtttt

.
tgcttatgcagcatccaaaaacaattaggaaactattgcttgtaattcacctgccattac

.
tttttaaatggctcttaagggcagttgtgagattatcttttcatggctatttgccttttg

.
agtattctttctacaaaaggaagtaaatattgttctttctttctttataatttatag

 |141 |151 |161 |171 |181 |191
ATTTTGCATGCTGAAACTTCTCAACCAGAAGAAAGGGCCTTCACAGTGTCTTTTATGTAA
F C M L K L L N Q K K G P S Q C P L C K
 |51 |61

 |201 |211
GAATGATATAACCAAAAGgtatataatttggtaatgatgctaggttgaagcaaccacag
N D I T K R
 |71

.
taggaaaaagtagaaattatttaataacatagcgttcctataaaaccattcatcagaaaa

.
atttataaaagagtttttagcacacagtaaattatttccaaagttattttcctgaaagtt

.
ttatgggacatctgccttatacaggtattagaaacttactgcctttctctaagtcttcta

.

gtgtaaaaacttgagacttatgtaaagtagggctgtatcgccgtgccccattgtctgt

.
taatcttgtttttatattt

Exon 5 | Start: 113028 | End: 113116 | Length: 88

.
aaattaaacaaaaaaaaaagtactctagttttctatgcaatgcattatatctgctgtgga

.
tttagggcagttatttatcagataattttaggcatttggtaggcttaaatgaatgacaaa

.
aagttactaaatcactgccatcacacggttttatacagatgtcaatgatgtattgattata

.
gagggttttctactgttgctgcatcttatttttattgtttacatgtcttttcttatttta

.
gtgtccttaaaagggtgataatcacttgctgagtggtgttttctcaaacaatttaatttcag

	|221	|231	|241	|251	|261	|271
GAGCCTACAAGAAAGTACGAGATTTAGTCAACTTGTTGAAGAGCTATTGAAAAATCATTG						
S L Q E S T R F S Q L V E E L L K I I C						
			|81			|91

	|281	|291	|301	.	.	.	.	.	.
TGCTTTTCAGCTTGACACAGGTTTGGAGTgtaagtggtgaatatcccaagaatgacactc									
A F Q L D T G L E Y									
			|101						

.
aagtgtgtccatgaaaactcaggaagtttgcaattactttctatgacgtggtgataa

.
gaccttttagtctaggttaatttttagttctgtatctgtaatctatttttaaaaaattact

.
cccactgggtctcacaccttattttatcaatcgtaagggtgcacatttttcacatcttaaca

.

tctctgaaattgggaacattttactattgagggtgtgtcatttgtttaatttggtgtgctt

.
tctttcttagtgatacagaaaataatagtg

Exon 6 | Start: 113723 | End: 113862 | Length: 139

.
tacattgttgggtgtcttagcttttagtgaaatacagtattgataggcaaatttcttagtgt

.
taaggtagaaaacaaggactctaaataactttgatgggtctgtgtatttgttttgtttcc

.
taggagtaaaatttccagttgattttttaaaatttgatttttaaaaaaatcacaggtaa

.
ccttaatgcattgtcttaacacaacaagagcatacatagggtttctcttggtttcttg

.
attataattcatacatttttctctaactgcaaacataatgttttcccttgatttttacag

 |311 |321 |331 |341 |351 |361
ATGCAAAACAGCTATAATTTTGCAAAAAAGGAAAAATAACTCTCCTGAACATCTAAAAGATG
 A N S Y N F A K K E N N S P E H L K D E
 |111 |121

 |371 |381 |391 |401 |411 |421
AAGTTTCTATCATCCAAAGTATGGGCTACAGAAACCGTGCCAAAAGACTTCTACAGAGTG
 V S I I Q S M G Y R N R A K R L L Q S E
 |131 |141

 |431 |441
AACCCGAAAATCCTTCCTTGgtaaaaccatttgttttcttcttcttcttcttcttctt
 P E N P S L

.
cttttttttttctttttttttttgagatggagtccttgctctgtggcccaggctagaagc

.
agtcctcctgccttagcccccttagtagctgggattacaggcacgcgccaccatgccagg

.
 ctaattttttagtagagacggggttcatcatgttggccaggctggtctcgaa

 ctctaacctcaggtgatccaccacctcggctcccaaattgctgggattacaggtgtg

 agccactgtgcccggccgta

Exon 7 | Start: 118104 | End: 118209 | Length: 105

.
 actactactatttttagtagactgggtctcactctgttgcttatgctggtcttgaac

 tcctggcctcaagcagtcctgctccagcctccaaagtgtgggattataggcatgagct

 accgctcccagcccagacatttttagtgtgtaaattcctgggcatttttccaggcatca

 tacatgttagctgactgatgatggtcaatttattttgtccatggtgtcaagtttctcttc

 agggaggaaaagcacagaactggccaacaattgcttgactgttctttaccatactgttttag

	|451	|461	|471	|481	|491	|501
	CAGGAAAC	CAGTCTC	AGTGTCCA	ACTCTCTA	ACCTTGGA	ACTGTGAGA
	Q	E	T	S	L	S
	|151	V	Q	L	S	N
				L	G	T
				V	R	T
				L	R	T
	|511	|521	|531	|541	.	.
	AAGCAGCG	GATACAA	CTCAAA	AGACGTCT	GTCTACAT	TGAATTGG
	K	Q	R	I	Q	P
	|171	Q	K	T	S	V
				Y	I	E
				L	G	

.
 ttttttaagtatttaataataattgctggattccttatcttatagttttgcaaaaatct

 tggtcataatttgtatttgtggtaggcagctttgggaagtgaattttatgagccctatgg

.
 tgagttataaaaaatgtaaaagacgcagttcccaccttgaagaatcttactttaaaaagg

 gagcaaaagaggccaggcatggtggctcacacctgtaatcccagcactttgggaggccaa

 agtgggtggatcacctgaggtcgggagttcgagaccagcctagccaa

Exon 8 | Start: 120695 | End: 120740 | Length: 45

.
 tagaaacgggggtctcactttgttggccaggctggtcttgaactcctaacctcaaataat

 ccacccatctcggcctcctcaagtgtgggattacaggtgagagccactgtgcctggcga

 agcccatgcctttaaccacttctctgtattacatactagcttaactagcattgtacctgc

 cacagtagatgctcagtaaatatttctagttgaatatctgtttttcaacaagtacatttt

 ttttaacccttttaattaagaaaacttttattgatttattttttggggggaaatttttag

 |551 |561 |571 |581 |591 .
 GATCTGATTCTTCTGAAGATACCGTTAATAAGGCAACTTATTGCAGgtgagtcaaagaga
 S D S S E D T V N K A T Y C S
 |191

.
 acctttgtctatgaagctggtattttcctatttagttaatattaaggattgatgtttctc

 tctttttaaaaatattttaacttttatttttaggttcagggatgtatgtgcagtttgttat

 ataggtaaacacacgacttgggatttgggtgtatagattttttcatcatccgggtactaa

gcataccccacagttttttgtttgctttctttctgaatttctccctcttcccaccttcct

.
ccctcaagtaggctgggtgtttctccagactagaatcatggattgga

Exon 9 | Start: 122062 | End: 122138 | Length: 76

.
gtatTTTTtagtagagatgggggtttcaccatgttggccaggctggctcttgaactcatgacc

.
tcaagtgggtccaccgcctcagcctcccaaagtgtggaattacaggcttgagccaccgt

.
gccagcaaccatttcatttcaactagaagtttctaaaggagagagcagctttcactaac

.
taaataagattggtcagctttctgtaatcgaaagagctaaaatgtttgatcttggtcatt

.
tgacagttctgcatacatgtaactagtgtttcttattaggactctgtcttttccctatag

|601	|611	|621	|631	|641	|651
TGTGGGAGATCAAGAATTGTTACAAATCACCCCTCAAGGAACCAGGGATGAAATCAGTTT					
V G D Q E L L Q I T P Q G T R D E I S L					
|201			|211		

|661	. . . . .
GGATTCTGCAAAAAAGGgtaatggcaaagtttgccaacttaacaggcactgaaaagagag	
D S A K K A	
|221	

.
tgggtagatacagtactgtaattagattattctgaagaccatttgggacctttacaaccc

.
acaaaatctcttggcagagtttagagtatcattctctgtcaaattgtcgtggtatggtctga

.
tagatttaaattggtactagactaatgtacctataataagaccttctgtaactgattgttg

.

|911	|921	|931	|941	|951	|961
TCTGTAATAAAAGCAAACAGCCTGGCTTAGCAAGGAGCCAACATAACAGATGGGCTGGAA					
C N K S K Q P G L A R S Q H N R W A G S					
		|311			|321
|971	|981	|991	|1001	|1011	|1021
GTAAGGAAACATGTAATGATAGGCGGACTCCCAGCACAGAAAAAAGGTAGATCTGAATG					
K E T C N D R R T P S T E K K V D L N A					
		|331			|341
|1031	|1041	|1051	|1061	|1071	|1081
CTGATCCCCTGTGTGAGAGAAAAGAATGGAATAAGCAGAAACTGCCATGCTCAGAGAAATC					
D P L C E R K E W N K Q K L P C S E N P					
		|351			|361
|1091	|1101	|1111	|1121	|1131	|1141
CTAGAGATACTGAAGATGTTCTTGATAACACTAAATAGCAGCATTGAGAAAAGTTAATG					
R D T E D V P W I T L N S S I Q K V N E					
		|371			|381
|1151	|1161	|1171	|1181	|1191	|1201
AGTGGTTTTCCAGAAGTGATGAACTGTTAGGTTCTGATGACTCACATGATGGGGAGTCTG					
W F S R S D E L L G S D D S H D G E S E					
		|391			|401
|1211	|1221	|1231	|1241	|1251	|1261
AATCAAATGCCAAAGTAGCTGATGTATTGGACGTTCTAAATGAGGTAGATGAATATTCTG					
S N A K V A D V L D V L N E V D E Y S G					
		|411			|421
|1271	|1281	|1291	|1301	|1311	|1321
GTTCTTCAGAGAAAATAGACTTACTGGCCAGTGATCCTCATGAGGCTTTAATATGTAAAA					
S S E K I D L L A S D P H E A L I C K S					
		|431			|441
|1331	|1341	|1351	|1361	|1371	|1381
GTGAAAGAGTTCACTCCAAATCAGTAGAGAGTAATATTGAAGACAAAATATTTGGGAAAA					
E R V H S K S V E S N I E D K I F G K T					
		|451			|461
|1391	|1401	|1411	|1421	|1431	|1441
CCTATCGGAAGAAGGCAAGCCTCCCAACTTAAGCCATGTAAGTAAAAATCTAATTATAG					
Y R K K A S L P N L S H V T E N L I I G					
		|471			|481
|1451	|1461	|1471	|1481	|1491	|1501

GAGCATTTGTTACTGAGCCACAGATAATACAAGAGCGTCCCCTCACAAATAAATTAAAGC
 A F V T E P Q I I Q E R P L T N K L K R
 |491 |501

|1511 |1521 |1531 |1541 |1551 |1561
 GTAAAAGGAGACCTACATCAGGCCTTCATCCTGAGGATTTTATCAAGAAAGCAGATTGG
 K R R P T S G L H P E D F I K K A D L A
 |511 |521

|1571 |1581 |1591 |1601 |1611 |1621
 CAGTTCAAAGACTCCTGAAATGATAAATCAGGGAACCTAACCAAACGGAGCAGAATGGTC
 V Q K T P E M I N Q G T N Q T E Q N G Q
 |531 |541

|1631 |1641 |1651 |1661 |1671 |1681
 AAGTGATGAATATTACTAATAGTGGTCATGAGAATAAAACAAAAGGTGATTCTATTTCAGA
 V M N I T N S G H E N K T K G D S I Q N
 |551 |561

|1691 |1701 |1711 |1721 |1731 |1741
 ATGAGAAAAATCCTAACCCAATAGAATCACTCGAAAAAGAATCTGCTTTCAAACGAAAG
 E K N P N P I E S L E K E S A F K T K A
 |571 |581

|1751 |1761 |1771 |1781 |1791 |1801
 CTGAACCTATAAGCAGCAGTATAAGCAATATGGAACCTGAATTAAATATCCACAATTCAA
 E P I S S S I S N M E L E L N I H N S K
 |591 |601

|1811 |1821 |1831 |1841 |1851 |1861
 AAGCACCTAAAAAGAATAGGCTGAGGAGGAAGTCTTCTACCAGGCATATTTCATGCGCTTG
 A P K K N R L R R K S S T R H I H A L E
 |611 |621

|1871 |1881 |1891 |1901 |1911 |1921
 AACTAGTAGTCAGTAGAAATCTAAGCCACCTAATTGTAAGTGAATTGCAAATTGATAGTT
 L V V S R N L S P P N C T E L Q I D S C
 |631 |641

|1931 |1941 |1951 |1961 |1971 |1981
 GTTCTAGCAGTGAAGAGATAAAGAAAAAAGTACAACCAAATGCCAGTCAGGCACAGCA
 S S S E E I K K K K Y N Q M P V R H S R
 |651 |661

|1991 |2001 |2011 |2021 |2031 |2041
 GAAACCTACAACCTCATGGAAGGTAAAGAACCTGCAACTGGAGCCAAGAAGAGTAACAAGC

N L Q L M E G K E P A T G A K K S N K P
 |671 |681
 |2051 |2061 |2071 |2081 |2091 |2101
 CAAATGAACAGACAAGTAAAAGACATGACAGCGATACTTTCCAGAGCTGAAGTTAACAA
 N E Q T S K R H D S D T F P E L K L T N
 |691 |701
 |2111 |2121 |2131 |2141 |2151 |2161
 ATGCACCTGGTTCTTTTACTAAGTGTTCAAATACCAGTGAACCTTAAAGAATTTGTCAATC
 A P G S F T K C S N T S E L K E F V N P
 |711 |721
 |2171 |2181 |2191 |2201 |2211 |2221
 CTAGCCTTCCAAGAGAAGAAAAAGAAGAGAACTAGAAACAGTTAAAGTGCTAATAATG
 S L P R E E K E E K L E T V K V S N N A
 |731 |741
 |2231 |2241 |2251 |2261 |2271 |2281
 CTGAAGACCCCAAAGATCTCATGTTAAGTGGAGAAAGGGTTTGCAAACTGAAAGATCTG
 E D P K D L M L S G E R V L Q T E R S V
 |751 |761
 |2291 |2301 |2311 |2321 |2331 |2341
 TAGAGAGTAGCAGTATTTTCATTGGTACCTGGTACTGATTATGGCACTCAGGAAAGTATCT
 E S S S I S L V P G T D Y G T Q E S I S
 |771 |781
 |2351 |2361 |2371 |2381 |2391 |2401
 CGTTACTGGAAGTTAGCACTCTAGGGAAGGCAAAAACAGAACCAAATAAATGTGTGAGTC
 L L E V S T L G K A K T E P N K C V S Q
 |791 |801
 |2411 |2421 |2431 |2441 |2451 |2461
 AGTGTGCAGCATTTGAAAACCCCAAGGGACTAATTCATGGTTGTTCCAAAGATAATAGAA
 C A A F E N P K G L I H G C S K D N R N
 |811 |821
 |2471 |2481 |2491 |2501 |2511 |2521
 ATGACACAGAAGGCTTTAAGTATCCATTGGGACATGAAGTTAACCACAGTCGGGAAACAA
 D T E G F K Y P L G H E V N H S R E T S
 |831 |841
 |2531 |2541 |2551 |2561 |2571 |2581
 GCATAGAAATGGAAGAAAGTGAACCTTGATGCTCAGTATTTGCAGAATACATTCAAGGTTT
 I E M E E S E L D A Q Y L Q N T F K V S

		|851			|861
|2591	|2601	|2611	|2621	|2631	|2641
CAAAGCGCCAGTCATTTGCTCCGTTTCAAATCCAGGAAATGCAGAAGAGGAATGTGCAA					
K	R	Q	S	F	A
P	F	S	N	P	G
N	A	E	E	E	C
A	T				
		|871			|881
|2651	|2661	|2671	|2681	|2691	|2701
CATTCTCTGCCCACTCTGGGTCCTTAAAGAAACAAAGTCCAAAAGTCACTTTTGAATGTG					
F	S	A	H	S	G
S	L	K	K	Q	S
P	K	V	T	F	E
C	E				
		|891			|901
|2711	|2721	|2731	|2741	|2751	|2761
AACAAAAGGAAGAAAAATCAAGGAAAGAATGAGTCTAATATCAAGCCTGTACAGACAGTTA					
Q	K	E	E	N	Q
G	K	N	E	S	N
I	K	P	V	Q	T
V	N				
		|911			|921
|2771	|2781	|2791	|2801	|2811	|2821
ATATCACTGCAGGCTTTCCTGTGGTTGGTCAGAAAGATAAGCCAGTTGATAATGCCAAAT					
I	T	A	G	F	P
V	V	G	Q	K	D
K	P	V	D	N	A
K	C				
		|931			|941
|2831	|2841	|2851	|2861	|2871	|2881
GTAGTATCAAAGGAGGCTCTAGGTTTTGTCTATCATCTCAGTTCAGAGGCAACGAAACTG					
S	I	K	G	G	S
R	F	C	L	S	S
Q	F	R	G	N	E
T	G				
		|951			|961
|2891	|2901	|2911	|2921	|2931	|2941
GACTCATTACTCCAAATAAACATGGACTTTTACAAAACCCATATCGTATACCACCACTTT					
L	I	T	P	N	K
H	G	L	L	Q	N
P	Y	R	I	P	P
L	F				
		|971			|981
|2951	|2961	|2971	|2981	|2991	|3001
TTCCCATCAAGTCATTTGTTAAAACTAAATGTAAGAAAAATCTGCTAGAGGAAAACTTTG					
P	I	K	S	F	V
K	T	K	C	K	K
N	L	L	E	E	N
F	E				
		|991			|1001
|3011	|3021	|3031	|3041	|3051	|3061
AGGAACATTCAATGTCACCTGAAAGAGAAATGGGAAATGAGAACATTCCAAGTACAGTGA					
E	H	S	M	S	P
E	R	E	M	G	N
E	N	I	P	S	T
V	S				
		|1011			|1021
|3071	|3081	|3091	|3101	|3111	|3121
GCACAATTAGCCGTAATAACATTAGAGAAAATGTTTTTAAAGAAGCCAGCTCAAGCAATA					
T	I	S	R	N	N
I	R	E	N	V	F
K	E	A	S	S	S
N	I				
		|1031			|1041

|3131	|3141	|3151	|3161	|3171	|3181
TTAATGAAGTAGGTTCCAGTACTAATGAAGTGGGCTCCAGTATTAATGAAATAGGTTCCA					
N	E	V	G	S	S
			T	N	E
			V	G	S
			S	I	N
			E	I	G
			S	S	
		|1051			|1061
|3191	|3201	|3211	|3221	|3231	|3241
GTGATGAAAACATTCAAGCAGAACTAGGTAGAAACAGAGGGCCAAAATTGAATGCTATGC					
D	E	N	I	Q	A
			E	L	G
			R	N	R
			G	P	K
			L	N	A
			M	L	
		|1071			|1081
|3251	|3261	|3271	|3281	|3291	|3301
TTAGATTAGGGGTTTTGCAACCTGAGGTCTATAAACAAAGTCTTCCTGGAAGTAATTGTA					
R	L	G	V	L	Q
			P	E	V
			Y	K	Q
			S	L	P
			G	S	N
			C	K	
		|1091			|1101
|3311	|3321	|3331	|3341	|3351	|3361
AGCATCCTGAAATAAAAAAGCAAGAATATGAAGAAGTAGTTCAGACTGTTAATACAGATT					
H	P	E	I	K	K
			Q	E	Y
			E	E	V
			V	Q	T
			V	N	T
			D	F	
		|1111			|1121
|3371	|3381	|3391	|3401	|3411	|3421
TCTCTCCATATCTGATTTTCAGATAACTTAGAACAGCCTATGGGAAGTAGTCATGCATCTC					
S	P	Y	L	I	S
			D	N	L
			E	Q	P
			M	G	S
			S	S	H
			A	S	Q
		|1131			|1141
|3431	|3441	|3451	|3461	|3471	|3481
AGGTTTGTCTGAGACACCTGATGACCTGTTAGATGATGGTGAAATAAAGGAAGATACTA					
V	C	S	E	T	P
			D	D	L
			L	D	D
			G	E	I
			K	E	D
			T	S	
		|1151			|1161
|3491	|3501	|3511	|3521	|3531	|3541
GTTTTGCTGAAAATGACATTAAGGAAAGTTCTGCTGTTTTTAGCAAAAGCGTCCAGAAAG					
F	A	E	N	D	I
			K	E	S
			S	A	V
			F	S	K
			S	V	Q
			K	G	
		|1171			|1181
|3551	|3561	|3571	|3581	|3591	|3601
GAGAGCTTAGCAGGAGTCCTAGCCCTTTCACCCATACACATTTGGCTCAGGGTTACCGAA					
E	L	S	R	S	P
			S	P	F
			T	H	T
			H	L	A
			Q	G	Y
			R	R	
		|1191			|1201
|3611	|3621	|3631	|3641	|3651	|3661
GAGGGGCCAAGAAATTAGAGTCCTCAGAAGAGAACTTATCTAGTGAGGATGAAGAGCTTC					
G	A	K	K	L	E
			S	S	E
			E	N	L
			S	S	E
			D	E	E
			L	P	
		|1211			|1221

```

|3671      |3681      |3691      |3701      |3711      |3721
CCTGCTTCCAACACTTGTTATTTGGTAAAGTAAACAATATACCTTCTCAGTCTACTAGGC
  C  F  Q  H  L  L  F  G  K  V  N  N  I  P  S  Q  S  T  R  H
                        |1231                        |1241

|3731      |3741      |3751      |3761      |3771      |3781
ATAGCACCGTTGCTACCGAGTGTCTGTCTAAGAACACAGAGGAGAATTTATTATCATTGA
  S  T  V  A  T  E  C  L  S  K  N  T  E  E  N  L  L  S  L  K
                        |1251                        |1261

|3791      |3801      |3811      |3821      |3831      |3841
AGAATAGCTTAAATGACTGCAGTAACCAGGTAATATTGGCAAAGGCATCTCAGGAACATC
  N  S  L  N  D  C  S  N  Q  V  I  L  A  K  A  S  Q  E  H  H
                        |1271                        |1281

|3851      |3861      |3871      |3881      |3891      |3901
ACCTTAGTGAGGAAACAAAATGTTCTGCTAGCTTGTTTTCTTCACAGTGCAGTGAATTGG
  L  S  E  E  T  K  C  S  A  S  L  F  S  S  Q  C  S  E  L  E
                        |1291                        |1301

|3911      |3921      |3931      |3941      |3951      |3961
AAGACTTGACTGCAAATACAAACACCCAGGATCCTTTCTTGATTGGTTCTTCCAAACAAA
  D  L  T  A  N  T  N  T  Q  D  P  F  L  I  G  S  S  K  Q  M
                        |1311                        |1321

|3971      |3981      |3991      |4001      |4011      |4021
TGAGGCATCAGTCTGAAAGCCAGGGAGTTGGTCTGAGTGACAAGGAATTGTTTTAGATG
  R  H  Q  S  E  S  Q  G  V  G  L  S  D  K  E  L  V  S  D  D
                        |1331                        |1341

|4031      |4041      |4051      |4061      |4071      |4081
ATGAAGAAAGAGGAACGGGCTTGGAAGAAAATAATCAAGAAGAGCAAAGCATGGATTCAA
  E  E  R  G  T  G  L  E  E  N  N  Q  E  E  Q  S  M  D  S  N
                        |1351                        |1361

|4091      .      .      .      .      .      .      .      .
ACTTAGgtattggaaccagggttttgtgtttgccccagtcctatttatagaagtgagctaa
  L  G

.      .      .      .      .      .      .      .
atgtttatgcttttggggagcacattttacaaatttccaagtatagttaaaggaactgct

.      .      .      .      .      .      .      .
tcttaaacttgaaacatgttcctcctaagggtcttttcatagaaaaaagtccttcacaca

```


.
 gctaggacgtcatctttgactgaatgagctttaacatcctaattactggtggacttactt

 ctggtttcattttataaaagcaaaccaggtgtcccaaagcaaggaatttaacatctttg
 . .
 tgtgaca

Exon 11 | Start: 126952 | End: 127040 | Length: 88

.
 aaaggaactgcttcttaaacttgaacatgttcctcctaaggcttttcatagaaaaaa

 gtccttcacacagctaggacgtcatctttgactgaatgagctttaacatcctaattactg

 gtggacttacttctggtttcattttataaaagcaaaccaggtgtcccaaagcaaggaat

 ttaatcattttgtgtgacatgaaagtaaatccagtcctgccaatgagaagaaaaagacac

 agcaagttgcagcgttatagtctgcttttacatctgaacctctgtttttgttatttaag

|4101	|4111	|4121	|4131	|4141	|4151
GTGAAGCAGCATCTGGGTGTGAGAGTGAAACAAGCGTCTCTGAAGACTGCTCAGGGCTAT					
E	A	A	S	G	C
		E	S	E	T
		S	V	S	E
				D	C
				S	G
				L	S
		|1371		|1381	

|4161	|4171	|4181	.	.	.	.	.
CCTCTCAGAGTGACATTTTAACCACTCAGgtaaaaagcgtgtgtgtgtgtgcacatgcgt							
S	Q	S	D	I	L	T	T
						Q	
		|1391					

.
 gtgtgtggtgtcctttgcattcagtagtatgtatccacattcttaggtttgctgacatc

 atctctttgaattaatggcacaattgtttgtggttcattgtctccttaaattagactgta

.
 agcaccttgatggaactcatactaccttttatttcacacacacgcacacgcgcacacaca

 gcctacacatacactgcctagctcattgtagcatactaaatactgattttaatgaataag

 ctaaaccttcgaaaccatttgctaataccc

Exon 12 | Start: 135409 | End: 135580 | Length: 171

.
 tattttttcactccctagcttttaaagaaaataaccaacttcaaaaggacatcacataa

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 tagttccatactaggtgatttcaattcctgtgctaaaattaatttgatgatatttttc

 atttaatggaaagcttctcaaagtatttcattttcttggtgccatttatcgtttttgaag

|4191	|4201	|4211	|4221	|4231	|4241
CAGAGGGATACCATGCAACATAACCTGATAAAGCTCCAGCAGGAAATGGCTGAAGTAGAA					
Q R D T M Q H N L I K L Q Q E M A E L E					
	|1401			|1411	

|4251	|4261	|4271	|4281	|4291	|4301
GCTGTGTTAGAACAGCATGGGAGCCAGCCTTCTAACAGCTACCCCTTCCATCATAAGTGAC					
A V L E Q H G S Q P S N S Y P S I I S D					
	|1421			|1431	

|4311	|4321	|4331	|4341	|4351	.
TCTTCTGCCCTTGAGGACCTGCGAAATCCAGAACAAAGCACATCAGAAAAAGgtgtgtat					
S S A L E D L R N P E Q S T S E K A					
	|1441			|1451	

.

tgttggccaaacactgatatcttaagcaaaattctttccttcccctttatctccttctga

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 gccttggttcttgtccctgctcacaactaatataaccagtcagagggaccaaggcagtca

 ttcatgttgctcatctgagtacctacaacaagtagatgctatggggagcccatggaagata

 catggtatacaacatagctcttgctctattggaagctaagtggaatgggagaa

Exon 13 | Start: 141370 | End: 141496 | Length: 126

.
 tcagggccaaaggaatatagatttttttttcagccttgctcagctgggtgtctttattt

 actctgtcttaaagtgttccttttattatcattattttttaatcattgaattccatt

 tgggtgctagcatctgtctgttgcatgcttggtgtttataaaattctgcctgatatacttg

 tttaaaaaccaatttgtgtatcatagattgatgcttttgaaaaaatcagtattctaacc

 tgaattatcactatcagaacaaagcagtaaagtagatttgtttctcattccatttaaag

|4361	|4371	|4381	|4391	|4401	|4411
CAGTATTA	ACTTCACAGAAA	AGTAGTGAAT	ACCCTATAAG	CCAGAAATCC	CAGAAAGGCCTTT
V	L	T	S	Q	K
		S	S	E	Y
		P	I	S	Q
		N	P	E	G
		L	S		
		|1461			|1471

|4421	|4431	|4441	|4451	|4461	|4471
CTGCTGACA	AGTTTGAGGT	GTCTGCAGAT	AGTTCTACC	AGTAAAAATA	AAGAACCAGGAG
A	D	K	F	E	V
	S	A	D	S	S
		T	S	K	N
		K	E	P	G
		V			
		1481			1491

4481
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TGGAAGGtaagaacatcaatgtaaagatgctgtggtatctgacatctttatttatatt
E R

.
gaactctgattgttaatTTTTTcaccatacttctccagtttttgcatacaggcatTT
.
atacacttttattgctctaggatacttcttttgtttaatcctatataggtttttgaacc
.
tataacataagctacaacatgagaaatgtgCGGtagatagatatgtcccttctgaaggt
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cagaaaaaatataatggaggtaaacctgaacaagcttgaaactgatggtagacttct
. .
tcaaggca

Exon 14 | Start: 143463 | End: 143653 | Length: 190

.
agcctcccgagtagctgagattacaggcgccagccaccaccccagctactgacctgctt
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.
tgacatattggcaggcaacatgaatccagacttctaggctgtcttgCGGGctcttttttg
.
ccagtcatttctgatctctctgacatgagctgtttcatttatgctttggctgcccagcaa
.
gtatgatTTgtcctttcacaattggTggcgatggTTTTctccttcatttatctttctag

|4491	|4501	|4511	|4521	|4531	|4541
GTCATCCCTTCTAAATGCCCATCATTAGATGATAGGTGGTACATGCACAGTTGCTCTGG					
S	S	P	S	K	C
			P	S	L
			D	D	R
			W	Y	M
			H	S	C
			S	G	
		|1501		|1511	
|4551	|4561	|4571	|4581	|4591	|4601

GAGTCTTCAGAATAGAAACTACCCATCTCAAGAGGAGCTCATTAAAGTTGTTGATGTGGA
 S L Q N R N Y P S Q E E L I K V V D V E
 |1521 |1531

|4611 |4621 |4631 |4641 |4651 |4661
 GGAGCAACAGCTGGAAGAGTCTGGGCCACACGATTTGACGGAAACATCTTACTTGCCAAG
 E Q Q L E E S G P H D L T E T S Y L P R
 |1541 |1551

|4671
 GCAAGATCTAGgtaatatatttcactctgctgtattggaacaaacactttgatcttactctga
 Q D L E

.
 atcctacataaagatatctggttaaccaacttttagatgtactagtctatcatggacac

.
 ttttgttataacttaattaagccacttttagaaaaatagctcaagtggttaatacaaggttta

.
 cttgaaaattattgaaactgttaatccatctatatattttaattaatgggttaactaatgat

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 tttgaggatgagggagtcttggtgtactctaaatgtattatttcaggccaggcatagtgg

. . .
 ctcacgcctgta

Exon 15 | Start: 146746 | End: 147056 | Length: 310

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 tctaaaattatactattcctatgactaaacctttgcatatatcttttatctccctaggat

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.
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.
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.
cagaactttgtaattcaacattcatcggttgtaaatataaacttctcccattcctttcag

|4681 |4691 |4701 |4711 |4721 |4731
AGGGAACCCCTTACCTGGAATCTGGAATCAGCCTCTTCTCTGATGACCCTGAATCTGATC
G T P Y L E S G I S L F S D D P E S D P
|1561 |1571

|4741 |4751 |4761 |4771 |4781 |4791
CTTCTGAAGACAGAGCCCCAGAGTCAGCTCGTGTGGCAACATACCATCTTCAACCTCTG
S E D R A P E S A R V G N I P S S T S A
|1581 |1591

|4801 |4811 |4821 |4831 |4841 |4851
CATTGAAAGTTCCCAATTGAAAGTGCAGAATCTGCCAGAGTCCAGCTGCTGCTCATA
L K V P Q L K V A E S A Q S P A A A H T
|1601 |1611

|4861 |4871 |4881 |4891 |4901 |4911
CTACTGATACTGCTGGGTATAATGCAATGGAAGAAAGTGTGAGCAGGGAGAAGCCAGAAT
T D T A G Y N A M E E S V S R E K P E L
|1621 |1631

|4921 |4931 |4941 |4951 |4961 |4971
TGACAGCTTCAACAGAAAGGGTCAACAAAAGAATGTCCATGGTGGTGTCTGGCCTGACCC
T A S T E R V N K R M S M V V S G L T P
|1641 |1651

|4981
CAGAAGAATTTgtgagtgatccatgtatctccctaagtactaagacttaacaacatt
E E F
|1661

.
ctggaaagagttttatgtaggtattgtcaattaataacctagaggaagaaatctagaaaa

.
caatcacagttctgtgtaatttaatttcgattactaatttctgaaaatttagatctagat

.
aaagctatagtggtgattatatttatgtatatttacttgagaaaataattattaaatatta

.
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. . .
ctgtaaaagcaa

Exon 16 | Start: 150289 | End: 150376 | Length: 87

.
gagacttcaggtgtcttagaattttttaaatgtaccctttctgagaaaaacagagactta

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.
gacagagcaagactctgtctaaaaaaaaaaaaaaaaaattcactttaaatagttccagg

.
acacgtgtagaacgtgcaggattgctacataggtaaacatatgccatgggtggaataacta

.
gtattctgagctgtgtgctagaggttaactcatgataatggaatatttgatttaatttcag

 |4991 |5001 |5011 |5021 |5031 |5041
ATGCTCGTGTACAAGTTTGCCAGAAAAACACCACATCACTTTAACTAATCTAATTACTGAA
M L V Y K F A R K H H I T L T N L I T E
 |1671 |1681

 |5051 |5061 |5071
GAGACTACTCATGTTGTTATGAAAACAGgtataccaagaacctttacagaataccttgca
E T T H V V M K T D
 |1691

.
tctgctgcataaaaccacatgaggcgaggcacggtggcgcatgcctgtaatcgagcact

.
ttgggaggccgaggcgggcagatcacgagattaggagatcgagaccatcctggccagcat

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ggtgaaaccccgctcttactaaaaataaaaaaattagctgggtgtggtcgcgtgcgcct

.
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Exon 17 | Start: 154033 | End: 154110 | Length: 77

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tataatggagatctatagctagccttggcgtctagaagatgggtgttgagaagagggagt

.
ggacagatatttcctctggtcttaacttcatatcagcctcccctagacttccaaatatcc

.
atactgctgggttataaattagtggtgttttcagcctctgattctgtcaccaggggtttta

.
gaatcataaatccagattgatcttgggagtgtaaaaaactgaggctctttagcttcttag

.
gacagcacttcctgattttgttttcaacttctaatacctttgagtgtttttcattctgcag

|5081	|5091	|5101	|5111	|5121	|5131
ATGCTGAGTTTGTGTGAACGGACACTGAAATATTTTCTAGGAATTGCGGGAGGAAAAT					
A E F V C E R T L K Y F L G I A G G K W					
				|1701	|1711

|5141	|5151	.	.	.	.	.	.	.	.
GGGTAGTTAGCTATTTCTgtaagtataataactatttctcccctcctccctttaacacctc									
V V S Y F W									

.
agaattgcatttttacacctaacgtttaacacctaagggttttgctgatgctgagctctga

.
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cagataagctgggtgatgctgggaaatgggtctcttttataactaataggacctaactctg

.
ctcctagcaatgtagcatatgagctagggatttatttaatatgctggcaggaatccatgt

. . . .
gcagcaggcaaacttataa

Exon 18 | Start: 154611 | End: 154651 | Length: 40

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ataactaataggacctaattctgctcctagcaatgtagcatatgagctagggatttat
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.
ctctgtctccagaaggaaactgctgctacaagccttattaaagggtgtggcttagagg
.
gaaggacctctcctctgtcattcttctgtgctcttttgtgaatcgctgacctctctatc
.
tccgtgaaaagagcacgttcttctgctgtatgtaacctgtcttttctatgatctcttag
|5161 |5171 |5181 |5191 . . .
GGGTGACCCAGTCTATTAAAGAAAGAAAAATGCTGAATGAGgtaagtacttgatgttaca
V T Q S I K E R K M L N E
|1721 |1731
.
aactaaccagagatatcattcagtcatatagttaaaaatgtatttgcttccttccatca
.
atgcaccactttccttaacaatgcacaaatttccatgataatgaggatcatcaagaatt
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Exon 19 | Start: 160849 | End: 160932 | Length: 83

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. . . . .
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. . . . .
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. . . . .
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. . . . .
ttccattgaaggaagcttctctttctcttatcctgatgggtgtgtttggtttctttcag
      |5201      |5211      |5221      |5231      |5241      |5251
CATGATTTTGAAGTCAGAGGAGATGTGGTCAATGGAAGAAACCACCAAGGTCCAAAGCGA
H D F E V R G D V V N G R N H Q G P K R
                        |1741                        |1751

      |5261      |5271      . . . . .
GCAAGAGAATCCCAGGACAGAAAGgtaaagctccctccctcaagttgacaaaaatctcac
A R E S Q D R K

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cccaccactctgtattccactcccctttgcagagatgggccgcttcattttgtaagactt
. . . . .
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. . . . .
ggactttaagcagatgagaatctaa
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Exon 20 | Start: 166867 | End: 166921 | Length: 54

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. . . . .
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. . . . .
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. . . . .
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. . . . .
gaaaaagaaaagctcttcctttttgaaagtctgttttttgaataaaagccaatattcttt

. . . . .
tataactagattttccttctctccattcccctgtccctctctcttcctctcttcttcag

      |5281      |5291      |5301      |5311      |5321      |5331 .
ATCTTCAGGGGGCTAGAAATCTGTTGCTATGGGCCCTTCACCAACATGCCACAGgtaag
I F R G L E I C C Y G P F T N M P T D
      |1761                                |1771
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. . . . .
agcctgggagaaccccagagttccagcaccagcctttgtcttacatagtgaggattattata

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. . . . .
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gtgttcagatggcggttgagctgctgttagtgccaacatgtagtgagaaaaatatct
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Exon 21 | Start: 168790 | End: 168863 | Length: 73

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attaatggaaattagatctttgattttttttctttcaagcattttatttgagagactat

.
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.
gcaaattgacttaaaatccatacccctactattttaagaccattgtcctttggagcagag

.
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.
agggcctgggttaagtatgcagattactgcagtgattttacatctaaatgtccattttag

5341	5351	5361	5371	5381	5391														
ATCAACTGGAATGGATGGTACAGCTGTGTGGTGCTTCTGTGGTGAAGGAGCTTTCATCAT																			
Q	L	E	W	M	V	Q	L	C	G	A	S	V	V	K	E	L	S	S	F
|1781										|1791									

|5401		
TCACCCCTTGGCACAgtaagtattgggtgccctgtcagagagggaggacacaatattctct			
T	L	G	T
|1801			

.
cctgtgagcaagactggcacctgtcagtccttatggatgcccctactgtagcctcagaag

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tatgtccctccccctcctctctgtgactgccccagcatactgtgtttcaacaaatcatca

. . . .
agaaatgatgggctg

Exon 22 | Start: 170281 | End: 170341 | Length: 60

.

ccaggagtttgagaccagcctgggcaacatggcaaaaccctgtctctacaaaaatacaa

.

aaaaattagccaggggtggtggtacgtgtctgtagttccagctacttaggaggctgagat

.

ggaaggattgcttgagcccaggaggcagaggtggcagtgagctgagatcacaccactgca

.

ctccagcctgggtgacagagcaagaccctgtctcaaaaacaaacaaaaaaatgatgaag

.

tgacagttccagtagtcctactttgacactttgaatgctcttccttcctggggatccag

.

|5411	|5421	|5431	|5441	|5451	|5461
GGTGTCCACCCAATTGTGGTTGTGCAGCCAGATGCCTGGACAGAGGACAATGGCTTCCAT					
G V H P I V V V Q P D A W T E D N G F H					
	|1811			|1821	

.

Ggtaaggctgcctgcatgtacctgtgctatatggggtccttttgcagtggtttggtttatc

A

.

actcattacctggtgcttgagtagcacagttcttggcacattttaaatatttgttgaatg

.

aatggctaaaatgtctttttgatgtttttattgttatttgttttatattgtaaaagtaat

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.

caaggccgggcatggtggctcatgcctataattccagcactttgggaggtcaagatggag

.

gt

Exon 23 | Start: 172182 | End: 173689 | Length: 1507

.

taaaaatacaaaaattagctgggtgtgatggcatgtgcctgtaattccagctactcagga

 ggcagagacaggagaattgcttgaacccaggaggcggaggtgaatgagccgagattgcg

 ccatcacactctagcctcggcgacagagcaagactccgtctcaaaaaaaaaaaaaaaaaa

 ttagcttctacctcattaatcctaagaactcatacaaccaggaccctggagtcgattgat

 tagagcctagtccaggagaatgaattgacactaatctctgcttgtgttctctgtctccag

 |5471 |5481 |5491 |5501 |5511 |5521
 CAATTGGGCAGATGTGTGAGGCACCTGTGGTGACCCGAGAGTGGGTGTTGGACAGTGTAG
 I G Q M C E A P V V T R E W V L D S V A
 |1831 |1841

 |5531 |5541 |5551 |5561 |5571 |5581
 CACTCTACCAGTGCCAGGAGCTGGACACCTACCTGATACCCAGATCCCCACAGCCACT
 L Y Q C Q E L D T Y L I P Q I P H S H Y
 |1851 |1861

 |5591 |+11 |+21 |+31 |+41 |+51
 ACTGACTGCAGCCAGCCACAGGTACAGAGCCACAGGACCCCAAGAATGAGCTTACAAAGT
 *

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

 |+121 |+131 |+141 |+151 |+161 |+171
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 |+181 |+191 |+201 |+211 |+221 |+231
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 |+241 |+251 |+261 |+271 |+281 |+291
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 |+301 |+311 |+321 |+331 |+341 |+351
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 |+361 |+371 |+381 |+391 |+401 |+411
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+421	+431	+441	+451	+461	+471
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+481	+491	+501	+511	+521	+531
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+541	+551	+561	+571	+581	+591
ATTCTGAGGCAGGTATTAGAAATGAAAAGGAACTTGAAACCTGGGCATGGTGGCTCAGC					
+601	+611	+621	+631	+641	+651
CCTGTAATCCCAGCACTTTGGGAGGCCAAGGTGGGCAGATCACTGGAGGTCAGGAGTTCG					
+661	+671	+681	+691	+701	+711
AAACCAGCCTGGCCAACATGGTGAACCCCATCTCTACTAAAAATACAGAAATTAGCCGG					
+721	+731	+741	+751	+761	+771
TCATGGTGGTGGACACCTGTAATCCCAGCTACTCAGGTGGCTAAGGCAGGAGAATCACTT					
+781	+791	+801	+811	+821	+831
CAGCCCGGAGGTGGAGGTTGCAGTGAGCCAAGATCATACCACGGCACTCCAGCCTGGGT					
+841	+851	+861	+871	+881	+891
GACAGTGAGACTGTGGCTCAAAAAAAAAAAAAAAAAAGGAAAATGAACTAGAAGAGAT					
+901	+911	+921	+931	+941	+951
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+961	+971	+981	+991	+1001	+1011
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+1021	+1031	+1041	+1051	+1061	+1071
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+1081	+1091	+1101	+1111	+1121	+1131
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+1141	+1151	+1161	+1171	+1181	+1191
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+1201	+1211	+1221	+1231	+1241	+1251
GCTTGCTGAAGGAAGAAAAAGTGTTTTTCATAAACCCATTATCCAGGACTGTTTATAGCT					
+1261	+1271	+1281	+1291	+1301	+1311
GTTGGAAGGACTAGGTCTTCCCTAGCCCCCAGTGTCAGGGCAGTGAAGACTTGATT					

	+1321	+1331	+1341	+1351	+1361	+1371
	GTACAAAATACGTTTTGTAAATGTTGTGCTGTAACTGCAAATAAACTTGGTAGCAAA					
	+1381					
	CACTTCCAccatgaatgactgttcttgagacttaggccagccgactttctcagagccttt					
					
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	gcaaggtcagaagtctgaggtggctcaactgtttctttgtttcaggtttcatgaggccaa					
					
	aataaaggtgttcgcagggcgtgttccttctagaggctctgggtccttgagttctagg					
	. . .					
	actaagatc					