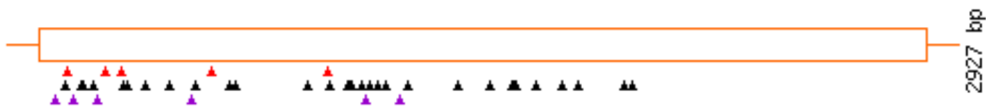
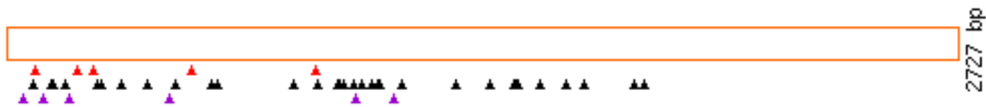


# Ligase IV

## Genomic Sequence



## Coding Sequence



For help interpreting these results, view the [PARSENP Introduction](#) page.

#	View On Sequence	Nucleotide Change	Effect	Restriction Enzyme Differences from REBASE		Description	Zygoty
				Gained in Variant	Lost from Reference		
1	<a href="#">G C</a>	T148A	A16=	<a href="#">CviRI</a>	<a href="#">MstI</a>	2719	Homo
2	<a href="#">G C</a>	C177T	T26I		<a href="#">BsgI</a> , <a href="#">Tsp4CI</a>	5434	Homo
3	<a href="#">G C</a>	T183A	L28*			7867	Homo
4	<a href="#">G C</a>	T202C	T34=			3158	Homo
5	<a href="#">G C</a>	T228C	I43T			1952	Homo
6	<a href="#">G C</a>	A234G	K45R	<a href="#">DdeI</a> , <a href="#">SauI</a>		383	Homo
7	<a href="#">G C</a>	T265A	H55Q	<a href="#">FaeI</a>	<a href="#">CviRI</a> , <a href="#">NlaIII</a>	6679	Homo
8	<a href="#">G C</a>	C277T	H59=	<a href="#">TspDTI</a>		3004	Homo
9	<a href="#">G C</a>	C303A	S68*	<a href="#">MseI</a> , <a href="#">TspEI</a> , <a href="#">VspI</a>	<a href="#">HinfI</a> , <a href="#">TfiI</a> , <a href="#">TspDTI</a>	8367	Homo
10	<a href="#">G C</a>	C350T	R84*			8726	Homo
11	<a href="#">G C</a>	T359A	Y87N			6745	Homo
12	<a href="#">G C</a>	A372T	E91V	<a href="#">MjaIV</a>		5161	Homo
13	<a href="#">G C</a>	T427A	D109E	<a href="#">Ksp632I</a> , <a href="#">MboII</a>		8644	Homo
14	<a href="#">G C</a>	C501T	A134V	<a href="#">AccI</a> , <a href="#">MjaIV</a>	<a href="#">BglI</a> , <a href="#">CviJI</a> , <a href="#">HaeIII</a> , <a href="#">MwoI</a>	3000	Homo
15	<a href="#">G C</a>	C565T	D155=			6371	Homo
16	<a href="#">G C</a>	C582T	A161V		<a href="#">AluI</a> , <a href="#">CviJI</a>	6144	Homo
17	<a href="#">G C</a>	C582T	A161V		<a href="#">AluI</a> , <a href="#">CviJI</a>	6191	Homo
18	<a href="#">G C</a>	C582T	A161V		<a href="#">AluI</a> , <a href="#">CviJI</a>	6200	Homo
19	<a href="#">G C</a>	T630A	L177*		<a href="#">CviRI</a>	7989	Homo
20	<a href="#">G C</a>	T687C	L196P	<a href="#">SecI</a> , <a href="#">StyI</a>	<a href="#">Bce83I</a> , <a href="#">MnlI</a> , <a href="#">SmlI</a>	6817	Homo

21	<a href="#">GC</a>	C701T	L201F	<a href="#">ApoI</a> , <a href="#">TspEI</a>		6810	Homo
22	<a href="#">GC</a>	T924C	I275T	<a href="#">BseMII</a> , <a href="#">DdeI</a> , <a href="#">TspRI</a>		4169	Homo
23	<a href="#">GC</a>	T985G	<b>Y295*</b>	<a href="#">MjaIV</a> , <a href="#">RsaI</a> , <a href="#">TatI</a>	<a href="#">SspI</a>	4315	Homo
24	<a href="#">GC</a>	C990T	T297I			56	Homo
25	<a href="#">GC</a>	C1050T	T317I			6534	Homo
26	<a href="#">GC</a>	C1052T	P318S			8074	Homo
27	<a href="#">GC</a>	C1063A	H321Q			5195	Homo
28	<a href="#">GC</a>	T1091C	C331R	<a href="#">AciI</a>	<a href="#">CviRI</a>	1888	Homo
29	<a href="#">GC</a>	T1091C	C331R	<a href="#">AciI</a>	<a href="#">CviRI</a>	1888	Homo
30	<a href="#">GC</a>	T1102C	D334=	<a href="#">TspGWI</a>	<a href="#">BccI</a>	6330	Homo
31	<a href="#">GC</a>	T1102C	D334=	<a href="#">TspGWI</a>	<a href="#">BccI</a>	6330	Homo
32	<a href="#">GC</a>	C1116T	A339V		<a href="#">CviJI</a>	7395	Homo
33	<a href="#">GC</a>	T1143A	M348K		<a href="#">CviRI</a> , <a href="#">NlaIII</a> , <a href="#">TspDTI</a>	8655	Homo
34	<a href="#">GC</a>	T1143A	M348K		<a href="#">CviRI</a> , <a href="#">NlaIII</a> , <a href="#">TspDTI</a>	8655	Homo
35	<a href="#">GC</a>	T1165A	D355E	<a href="#">TspEI</a>		5774	Homo
36	<a href="#">GC</a>	T1167C	I356T		<a href="#">MseI</a>	8272	Homo
37	<a href="#">GC</a>	T1167C	I356T		<a href="#">MseI</a>	8272	Homo
38	<a href="#">GC</a>	T1207C	F369=			4425	Homo
39	<a href="#">GC</a>	T1207C	F369=			4425	Homo
40	<a href="#">GC</a>	T1230C	I377T	<a href="#">AccI</a> , <a href="#">HindII</a> , <a href="#">MjaIV</a>		1385	Homo
41	<a href="#">GC</a>	T1230C	I377T	<a href="#">AccI</a> , <a href="#">HindII</a> , <a href="#">MjaIV</a>		1835	Homo
42	<a href="#">GC</a>	C1234A	N378K			5586	Homo
43	<a href="#">GC</a>	C1388T	R430C	<a href="#">MfeI</a> , <a href="#">TspEI</a>	<a href="#">Hpy178III</a>	8377	Homo
44	<a href="#">GC</a>	T1483A	D461E		<a href="#">BccI</a> , <a href="#">FokI</a>	5836	Homo
45	<a href="#">GC</a>	T1551A	M484K	<a href="#">AluI</a> , <a href="#">CviJI</a> , <a href="#">HindIII</a>	<a href="#">FokI</a> , <a href="#">Hin4I</a> , <a href="#">SfaNI</a>	6753	Homo
46	<a href="#">GC</a>	C1559T	H487Y		<a href="#">Hin4I</a>	4289	Homo
47	<a href="#">GC</a>	T1564G	F488L			3091	Homo
48	<a href="#">GC</a>	G1626A	C509Y		<a href="#">DraIII</a>	8667	Homo
49	<a href="#">GC</a>	C1705A	N535K			6047	Homo
50	<a href="#">GC</a>	G1754T	V552F		<a href="#">AccI</a> , <a href="#">MjaIV</a> , <a href="#">MnlI</a>	7850	Homo
51	<a href="#">GC</a>	T1896C	M599T	<a href="#">ApaLI</a> , <a href="#">BseSI</a> , <a href="#">HgiAI</a> , <a href="#">MjaIV</a> , <a href="#">SduI</a>	<a href="#">NlaIII</a>	7207	Homo
52	<a href="#">GC</a>	C1926T	S609F	<a href="#">AhaIII</a> , <a href="#">MseI</a>	<a href="#">TaqII</a>	7795	Homo

[Download Tab-Separated table](#)

No [protein homology model](#) was submitted. You may add one using any or all of the fields below.

[Blocks Families:](#) [Blocks File:](#)  [Sequence Alignment:](#)  **-OR-**

## Genomic Sequence

```

ctcattaaaatcaaaacagtttgaatcaaaactcccttatataacctttgctgttggtgatttgttttct      0
                                                                                   72

                                     M E S V S K S D A K P      11
tttccccttaaagggtgtctttctgcaatt atg gaa agt gtc tca aaa agt gat gcc aaa cca  133

Q A F V A A Q V P F I H L C T V L E      29
cag gca ttt gtt gct gcg caa gtt ccg ttc att cac ctc tgc aca gtt ttg gag      187
      aA16=[1]                                     tT26I[2]
                                                    aL28*[3]

K I Q K T K L R P D K S K I L K E F      47
aaa att cag aag act aaa ctc cga cca gac aaa agc aaa atc cta aag gaa ttt      241
      cT34=[4]                                     cI43T[5]
                                                    gK45R[6]

I D S W R N F H A A L H K D N P D T      65
ata gat tca tgg agg aat ttc cat gca gca ctt cac aag gac aac ccg gac aca      295
      aH55Q[7]                                     tH59=[8]

A D S F Y A V M R L I V P S F E R E      83
gca gat tca ttt tac gct gtt atg cgt ctc att gtg cct tca ttt gag agg gag      349
      aS68*[9]

R M A Y G I K E N M L A K L Y I E V      101
cga atg gct tat ggt ata aaa gag aac atg ctt gcc aaa ctg tat att gag gtt      403
tR84*[10]  aY87N[11]                               tE91V[12]

L G L P K N G D E A N K L L N Y R A      119
tta ggt cta cct aaa aat gga gat gag gca aac aaa ctt tta aat tac aga gct      457
      aD109E[13]

P T T S Q G E A G D F A L M A Y F V      137
cca acc act tct caa gga gaa gca ggt gac ttt gcc ctt atg gcc tac ttt gtc      511
                                                    tA134V[14]

```

L K K R C T S Q G N L S I K E V N D 155  
 ctg aaa aaa agg tgc aca agt cag gga aat tta agc att aaa gaa gtc aat gac 565  
 tD155=[15]

F L D S V A I N N A S K Q K D Q V K 173  
 ttc ttg gat tct gta gct atc aac aat gcc agc aaa cag aag gat caa gtg aag 619  
 tA161V[16]  
 tA161V[17]  
 tA161V[18]

K S L L H L I T Q S S A L E Q K W L 191  
 aaa agc ctt ttg cat cta ata act cag agt tca gct ttg gaa cag aag tgg ctc 673  
 aL177\*[19]

I R M I L K D M K L G I S K E T V L 209  
 att aga atg atc ctc aag gac atg aaa ctt ggc att agc aag gag acc gtt ctt 727  
 cL196P[20] tL201F[21]

Q V F H P D A P E F Y N V T T D L N 227  
 cag gtt ttc cat cca gat gca cca gaa ttc tac aat gtc acc aca gat ctg aat 781

K V C R Q L H D P S V S L S E V S I 245  
 aaa gta tgc aga caa ctt cat gac cca tct gtg tct ctc agt gaa gtc tcc att 835

D L F S A F K P M L A A V A N I R Q 263  
 gat cta ttc tct gct ttt aaa cca atg ctg gct gct gtt gcc aat atc aga cag 889

I E K Q M G N R P F Y I E T K L D G 281  
 ata gag aag caa atg ggc aac cgg cct ttc tac att gag acg aag cta gat ggt 943  
 cI275T[22]

E R I Q L H K A G D V Y K Y Y T R N 299  
 gaa cgc att caa ctg cac aaa gct gga gat gtt tac aaa tat tac aca agg aat 997  
 gY295\*[23]  
 tT297I[24]

S Y E Y T Q Q F G A S P L E G S L T 317  
 tct tat gag tat acc caa cag ttt ggg gcc tct cca cta gag ggc tcc ctc aca 1051  
 tT317I[25]

P Y I H N V F S P H V V N C I L D G 335  
 cca tac att cac aat gtc ttt agc cct cat gtg gtg aac tgc att cta gat gga 1105  
 tP318S[26] aH321Q[27] cC331R[28] cD334=[30]  
 cC331R[29] cD334=[31]

E M M A Y N P K T E T F M Q K G S K 353  
 gag atg atg gct tat aac cct aaa act gag acc ttc atg cag aag ggc agt aag 1159  
 tA339V[32] aM348K[33]  
 aM348K[34]

F D I K R L V D D S D L Q T C F C V 371  
 ttt gat att aaa agg ctg gtg gat gac tct gat ttg caa acc tgc ttt tgc gta 1213

aD355E[35]  
 cI356T[36]  
 cI356T[37]

cF369=[38]  
 cF369=[39]

F D V L L I N N Q K F G K E P L K K 389  
 ttt gat gtc ttg ttg ata aac aat cag aag ttt gga aag gaa cct ctc aag aag 1267  
 cI377T[40]  
 cI377T[41]  
 aN378K[42]

R Y E S L E T V F S P I K G R I H L 407  
 cgt tac gaa agt ctt gag act gtc ttc tcc ccc atc aaa ggc cgt atc cac ctg 1321

V S K S E G R T M Q E V V N S L N E 425  
 gtc tct aaa tcc gaa ggc aga acc atg caa gaa gtg gtg aat tct ctt aac gag 1375

A I D N R E E G I M V K D P M S I Y 443  
 gcc att gac aat cgt gaa gag ggg att atg gtt aag gat cca atg tcc att tac 1429  
 tR430C[43]

K P D K R G E G W L K I K P E Y V D 461  
 aaa cca gat aaa cgt ggg gaa gga tgg cta aag att aaa cct gaa tat gtg gat 1483  
 aD461E[44]

G L M D E L D L L I V G G Y W G K G 479  
 ggg cta atg gat gaa ctt gat ctg ctg ata gtg ggt ggt tac tgg ggt aaa ggc 1537

R R S G M L S H F L C A V A E V P S 497  
 agg aga agt ggg atg ctt tct cat ttt ctc tgc gcg gta gct gag gtg cca agt 1591  
 aM484K[45] tH487Y[46]  
 gF488L[47]

P G E K P T V F H T L C R I G S G Y 515  
 cct ggg gaa aag ccc acg gtg ttc cac acg ctg tgt cgc att gga tct ggc tat 1645  
 aC509Y[48]

T L K E L Y D L G V K L A K H W K V 533  
 acc tta aaa gaa cta tat gat ctt ggt gtg aag ttg gcc aaa cat tgg aaa gta 1699

Y N K N N P P A A I L C G T E K P E 551  
 tac aac aaa aat aat cct ccc gca gcc att ttg tgt ggg aca gaa aag cca gag 1753  
 aN535K[49]

V Y I E P R N S V I L Q V K A A E I 569  
 gtt tac ata gaa cca cgc aac tct gtg atc tta caa gtc aaa gca gca gag atc 1807  
 tV552F[50]

V T S E M Y K T D C T L R F P R I E 587  
 gtc aca agc gaa atg tat aag acc gac tgc aca ttg cgt ttc cct aga ata gaa 1861

R I R E D K E W H Q C M T L D D L N 605  
 aga atc cga gaa gac aaa gag tgg cat cag tgc atg acc ttg gat gac ctg aac 1915

## cM599T [51]

Q	F	R	S	K	A	S	G	K	L	A	S	R	H	L	N	I	H	623
cag	ttt	cg	tct	aaa	gct	tcc	gga	aag	ctg	gca	tca	aga	cat	cta	aac	atc	cat	1969
			tS609F [52]															
E	D	Q	P	E	K	K	K	R	K	I	V	A	K	P	K	K	T	641
gaa	gac	cag	cct	gaa	aag	aag	aag	cg	aaa	atc	gtc	gcc	aag	ccc	aag	aag	acc	2023
I	G	V	I	D	H	F	K	S	Q	D	L	S	K	V	A	K	E	659
ata	gga	gtc	att	gac	cac	ttt	aaa	tcc	cag	gat	ttg	tca	aag	ggt	gcc	aaa	gag	2077
T	D	M	F	E	E	V	E	F	C	V	I	N	G	D	D	E	H	677
aca	gat	atg	ttt	gaa	gag	ggt	gag	ttt	tgt	gtg	ata	aat	ggc	gat	gat	gaa	cat	2131
S	K	A	E	L	E	K	G	V	A	R	C	G	G	I	V	V	Q	695
tcc	aaa	gca	gag	ctt	gaa	aaa	ggg	gtg	gcg	cg	tgt	gga	ggc	atc	ggt	gtg	cag	2185
N	P	G	K	D	T	Y	C	A	I	A	A	V	Q	N	M	R	V	713
aat	cct	gga	aag	gac	acg	tac	tgc	gcc	att	gca	gct	gtg	cag	aac	atg	aga	gtg	2239
K	N	L	I	S	S	D	Q	H	D	V	V	W	A	T	W	L	L	731
aag	aac	ctc	atc	tca	tca	gat	cag	cat	gat	gtg	gtg	tgg	gct	act	tgg	ctt	tta	2293
E	C	L	E	N	K	Q	V	I	P	W	Q	P	R	H	M	I	H	749
gag	tgt	ctg	gaa	aat	aag	cag	ggt	atc	cca	tgg	caa	cca	cg	cac	atg	atc	cac	2347
M	S	P	S	T	R	E	H	F	A	K	E	Y	D	Q	Y	G	D	767
atg	tca	cct	tcc	aca	agg	gaa	cac	ttc	gct	aaa	gag	tat	gat	cag	tat	gga	gac	2401
S	Y	Y	V	D	T	S	E	Q	Q	L	R	D	V	I	E	R	I	785
agt	tat	tac	ggt	gac	act	agt	gaa	cag	cag	ctg	agg	gat	gtc	att	gaa	agg	atc	2455
S	S	A	E	V	K	S	L	S	V	A	Q	I	E	A	E	N	A	803
agc	tcc	gca	gaa	gtc	aag	agt	ctg	tct	gtg	gct	cag	ata	gaa	gca	gag	aat	gct	2509
W	D	D	L	P	T	S	I	F	R	P	Y	S	A	Y	F	D	R	821
tgg	gat	gac	ttg	cct	act	agc	att	ttt	agg	cct	tac	agt	gca	tac	ttt	gac	cg	2563
C	A	D	I	G	D	P	K	S	V	I	C	G	T	C	L	D	T	839
tgt	gct	gac	ata	gga	gat	ccc	aag	tct	ggt	ata	tgc	ggt	acg	tgt	tta	gac	act	2617
R	A	L	E	F	R	F	H	G	G	K	V	V	E	K	L	K	E	857
cg	gcc	tta	gaa	ttc	aga	ttt	cat	ggc	ggt	aaa	ggt	gtg	gag	aaa	ctc	aaa	gaa	2671
G	I	S	H	V	V	V	E	D	M	K	R	A	L	D	L	K	T	875
gga	atc	tca	cat	gtg	gta	gta	gaa	gat	atg	aaa	agg	gct	ctg	gac	cta	aag	aca	2725
L	R	R	L	H	A	K	K	F	K	I	V	H	E	S	W	V	T	893

ctg agg cga ctt cat gcc aag aag ttt aaa att gtt cat gaa tca tgg gtt act 2779

D S I K A G H V K D E I D Y L I 909  
gat tcc atc aaa gca ggc cat gta aag gat gag att gac tac ctg att taaaaata 2835

909  
aaagctactagaaaatcaaaacactgaaacattttacactttttatacctaggtgtcacatactgttcttttttg 2907

909  
ctacatctagcgtacaatt 2927

## Coding Sequence

M E S V S K S D A K P Q A F V A A Q 18  
atg gaa agt gtc tca aaa agt gat gcc aaa cca cag gca ttt gtt gct gcg caa 54  
aA16=[1]

V P F I H L C T V L E K I Q K T K L 36  
gtt ccg ttc att cac ctc tgc aca gtt ttg gag aaa att cag aag act aaa ctc 108  
tT26I[2] cT34=[4]  
aL28\*[3]

R P D K S K I L K E F I D S W R N F 54  
cga cca gac aaa agc aaa atc cta aag gaa ttt ata gat tca tgg agg aat ttc 162  
cI43T[5]  
gK45R[6]

H A A L H K D N P D T A D S F Y A V 72  
cat gca gca ctt cac aag gac aac ccg gac aca gca gat tca ttt tac gct gtt 216  
aH55Q[7] tH59=[8] aS68\*[9]

M R L I V P S F E R E R M A Y G I K 90  
atg cgt ctc att gtg cct tca ttt gag agg gag cga atg gct tat ggt ata aaa 270  
tR84\*[10] aY87N[11]

E N M L A K L Y I E V L G L P K N G 108  
gag aac atg ctt gcc aaa ctg tat att gag gtt tta ggt cta cct aaa aat gga 324  
tE91V[12]

D E A N K L L N Y R A P T T S Q G E 126  
gat gag gca aac aaa ctt tta aat tac aga gct cca acc act tct caa gga gaa 378  
aD109E[13]

A G D F A L M A Y F V L K K R C T S 144  
gca ggt gac ttt gcc ctt atg gcc tac ttt gtc ctg aaa aaa agg tgc aca agt 432  
tA134V[14]

Q G N L S I K E V N D F L D S V A I 162  
cag gga aat tta agc att aaa gaa gtc aat gac ttc ttg gat tct gta gct atc 486  
tD155=[15] tA161V[16]  
tA161V[17]

tA161V[18]

N N A S K Q K D Q V K K S L L H L I 180  
 aac aat gcc agc aaa cag aag gat caa gtg aag aaa agc ctt ttg cat cta ata 540  
aL177\*[19]

T Q S S A L E Q K W L I R M I L K D 198  
 act cag agt tca gct ttg gaa cag aag tgg ctc att aga atg atc ctc aag gac 594  
 cL196P[20]

M K L G I S K E T V L Q V F H P D A 216  
 atg aaa ctt ggc att agc aag gag acc gtt ctt cag gtt ttc cat cca gat gca 648  
 tL201F[21]

P E F Y N V T T D L N K V C R Q L H 234  
 cca gaa ttc tac aat gtc acc aca gat ctg aat aaa gta tgc aga caa ctt cat 702

D P S V S L S E V S I D L F S A F K 252  
 gac cca tct gtg tct ctc agt gaa gtc tcc att gat cta ttc tct gct ttt aaa 756

P M L A A V A N I R Q I E K Q M G N 270  
 cca atg ctg gct gct gtt gcc aat atc aga cag ata gag aag caa atg ggc aac 810

R P F Y I E T K L D G E R I Q L H K 288  
 cgg cct ttc tac att gag acg aag cta gat ggt gaa cgc att caa ctg cac aaa 864  
 cI275T[22]

A G D V Y K Y Y T R N S Y E Y T Q Q 306  
 gct gga gat gtt tac aaa tat tac aca agg aat tct tat gag tat acc caa cag 918  
gY295\*[23]  
 tT297I[24]

F G A S P L E G S L T P Y I H N V F 324  
 ttt ggg gcc tct cca cta gag ggc tcc ctc aca cca tac att cac aat gtc ttt 972  
 tT317I[25] aH321Q[27]  
 tP318S[26]

S P H V V N C I L D G E M M A Y N P 342  
 agc cct cat gtg gtg aac tgc att cta gat gga gag atg atg gct tat aac cct 1026  
 cC331R[28] cD334=[30] tA339V[32]  
 cC331R[29] cD334=[31]

K T E T F M Q K G S K F D I K R L V 360  
 aaa act gag acc ttc atg cag aag ggc agt aag ttt gat att aaa agg ctg gtg 1080  
 aM348K[33] aD355E[35]  
 aM348K[34] cI356T[36]  
 cI356T[37]

D D S D L Q T C F C V F D V L L I N 378  
 gat gac tct gat ttg caa acc tgc ttt tgc gta ttt gat gtc ttg ttg ata aac 1134  
 cF369=[38] cI377T[40]  
 cF369=[39] cI377T[41]  
 aN378K[42]

N Q K F G K E P L K K R Y E S L E T	396
aat cag aag ttt gga aag gaa cct ctc aag aag cgt tac gaa agt ctt gag act	1188
V F S P I K G R I H L V S K S E G R	414
gtc ttc tcc ccc atc aaa ggc cgt atc cac ctg gtc tct aaa tcc gaa ggc aga	1242
T M Q E V V N S L N E A I D N R E E	432
acc atg caa gaa gtg gtg aat tct ctt aac gag gcc att gac aat cggt gaa gag	1296
tR430C[43]	
G I M V K D P M S I Y K P D K R G E	450
ggg att atg gtt aag gat cca atg tcc att tac aaa cca gat aaa cgt ggg gaa	1350
G W L K I K P E Y V D G L M D E L D	468
gga tgg cta aag att aaa cct gaa tat gtg gat ggg cta atg gat gaa ctt gat	1404
aD461E[44]	
L L I V G G Y W G K G R R S G M L S	486
ctg ctg ata gtg ggt ggt tac tgg ggt aaa ggc agg aga agt ggg atg ctt tct	1458
aM484K[45]	
H F L C A V A E V P S P G E K P T V	504
cat ttt ctc tgc gcg gta gct gag gtg cca agt cct ggg gaa aag ccc acg gtg	1512
tH487Y[46]	
gF488L[47]	
F H T L C R I G S G Y T L K E L Y D	522
ttc cac acg ctg tgt cgc att gga tct ggc tat acc tta aaa gaa cta tat gat	1566
aC509Y[48]	
L G V K L A K H W K V Y N K N N P P	540
ctt ggt gtg aag ttg gcc aaa cat tgg aaa gta tac aac aaa aat aat cct ccc	1620
aN535K[49]	
A A I L C G T E K P E V Y I E P R N	558
gca gcc att ttg tgt ggg aca gaa aag cca gag gtt tac ata gaa cca cgc aac	1674
tV552F[50]	
S V I L Q V K A A E I V T S E M Y K	576
tct gtg atc tta caa gtc aaa gca gca gag atc gtc aca agc gaa atg tat aag	1728
T D C T L R F P R I E R I R E D K E	594
acc gac tgc aca ttg cgt ttc cct aga ata gaa aga atc cga gaa gac aaa gag	1782
W H Q C M T L D D L N Q F R S K A S	612
tgg cat cag tgc atg acc ttg gat gac ctg aac cag ttt cgg tct aaa gct tcc	1836
cM599T[51]	
tS609F[52]	
G K L A S R H L N I H E D Q P E K K	630
gga aag ctg gca tca aga cat cta aac atc cat gaa gac cag cct gaa aag aag	1890

K R K I V A K P K K T I G V I D H F	648
aag cgc aaa atc gtc gcc aag ccc aag aag acc ata gga gtc att gac cac ttt	1944
K S Q D L S K V A K E T D M F E E V	666
aaa tcc cag gat ttg tca aag gtt gcc aaa gag aca gat atg ttt gaa gag gtt	1998
E F C V I N G D D E H S K A E L E K	684
gag ttt tgt gtg ata aat ggc gat gat gaa cat tcc aaa gca gag ctt gaa aaa	2052
G V A R C G G I V V Q N P G K D T Y	702
ggg gtg gcg cgc tgt gga ggc atc gtt gtg cag aat cct gga aag gac acg tac	2106
C A I A A V Q N M R V K N L I S S D	720
tgc gcc att gca gct gtg cag aac atg aga gtg aag aac ctc atc tca tca gat	2160
Q H D V V W A T W L L E C L E N K Q	738
cag cat gat gtg gtg tgg gct act tgg ctt tta gag tgt ctg gaa aat aag cag	2214
V I P W Q P R H M I H M S P S T R E	756
gtt atc cca tgg caa cca cgt cac atg atc cac atg tca cct tcc aca agg gaa	2268
H F A K E Y D Q Y G D S Y Y V D T S	774
cac ttc gct aaa gag tat gat cag tat gga gac agt tat tac gtt gac act agt	2322
E Q Q L R D V I E R I S S A E V K S	792
gaa cag cag ctg agg gat gtc att gaa agg atc agc tcc gca gaa gtc aag agt	2376
L S V A Q I E A E N A W D D L P T S	810
ctg tct gtg gct cag ata gaa gca gag aat gct tgg gat gac ttg cct act agc	2430
I F R P Y S A Y F D R C A D I G D P	828
att ttt agg cct tac agt gca tac ttt gac cgg tgt gct gac ata gga gat ccc	2484
K S V I C G T C L D T R A L E F R F	846
aag tct gtt ata tgc ggt acg tgt tta gac act cgt gcc tta gaa ttc aga ttt	2538
H G G K V V E K L K E G I S H V V V	864
cat ggc ggt aaa gtt gtg gag aaa ctc aaa gaa gga atc tca cat gtg gta gta	2592
E D M K R A L D L K T L R R L H A K	882
gaa gat atg aaa agg gct ctg gac cta aag aca ctg agg cga ctt cat gcc aag	2646
K F K I V H E S W V T D S I K A G H	900
aag ttt aaa att gtt cat gaa tca tgg gtt act gat tcc atc aaa gca ggc cat	2700
V K D E I D Y L I	909
gta aag gat gag att gac tac ctg att	2727

