Appendix

Table 1 Primer sets for PCR amplification

Primer name	Primer sequence (5'→3')	Accession number
*NR*F	TTCACTCGTCCCAAGAAATCCG	JF796047
*NR*R	AAGCCAGAGCCAAAGTATCACC	
*NiR*F	GTACTGCCTGATGTGCCTGA	XM002285172
*NiR*R	CACTAAGGCCCCCTTTCAGT	
*GS1-1*F†	ACCCTTTCTGGACCAGTTAGCG	X94320
*GS1-1*R	CGCGGATCCTCCACTAGTGATTTCACTATAGG	
*GS1-2*F	AAAGCGAGAACGCTATCAGG	X94321
*GS1-2*R	CGCGGATCCTCCACTAGTGATTTCACTATAGG	
*GS2*F	GAGCCCATCCCTACAAACAA	XM002279461
*GS2*R	GACCTTCAATGCCAGCTTCT	
*Fd-GOGAT*F	CCATGCCAAACATACAGCAG	XM002267020
*Fd-GOGAT*R	GCATTCTCTGGTCCAACCTC	
*NADH-GOGAT*F	TGACGGAAAGATCCCACCTA	XM002267829
*NADH-GOGAT*R	CGAAACCCAAGCTGAGACAT	

F, forward primer; R, reverse primer.

Table 2 Homology of nitrogen metabolism genes between Jumeigui and other grape varieties

Gene	Grape varieties	Accession number	Score bits	Amino acid identities	% Identies	Gaps
NR	Fujiminori	JF796047	1677	831/832	99	0
NiR	Pinot Noir	XM_002285172	813	394/404	98	1/404
GS1-1	Sultanina	X94320	658	318/318	100	0
	Pinot Noir	XM_002283135	626	301/318	95	0
GS1-2	Sultanina	X94321	609	318/321	99	0
	Pinot Noir	XM_002263820	612	320/321	99	0
GS2	Pinot Noir	XM_002279461	542	258/258	100	0
Fd-GOGAT	Sultanina	X98542	675	324/328	99	0
	Pinot Noir	XM_002267020	869	414/415	99	0
NADH-GOGAT	Pinot Noir	XM_002267829	1013	492/492	100	0

Nucleotide sequences of 'Jumeigui' grapevine *NR*, *NiR*, *GS1-1*, *GS1-2*, *GS2*, *Fd-GOGAT* and *NADH-GOGAT* partial cDNA. The 3'-untranslated region of *GS1-1* and *GS1-2* was underlined. The different nucleotides of *NR*, *GS1-2* and *Fd-GOGAT* with 'Fujiminori' grapevine (GenBank JF796047), 'Sultanina' grapevine (GenBank X94321) and 'Pinot Noir' grapevine (GenBank XM_002267020) were marked by a double underline, respectively. For qPCR, amplicon of cDNA sequences of these genes were emphasized in bold.

NR

Length 2,497bp

Definition Vitis vinifera nitrate reductase

Source Vitis vinifera (grape)

Clutivar “Jumeigui” (*Vitis vinifera* L. x *Vitis labrusca* L.)

ORIGIN

1 TTCACTCGTC CCAAGAAATC CGTTGCAGCA GTGGAGGATG ATTCCTCCAG TGACGACGAA

61 AATGAACCCG ATTGGAAAGA TTTGGTTCGC AAGGGTAACA GTGAATTAGA GCCGTCCGTC

121 TTGGACTCAC GAGACGAAGG AACTGCGGAT AATTGGATCC AGCGCAACCC TTCCATGGTC

181 CGTCTCACAG GGAAACACCC CTTCAACTCG GAGGCGCCAC TGAACCGACT CATGCACCAT

241 GGCTTCATCA CGCCCGTCCC TCTCCACTAC GTTCGCAACC ACGGTGCGGT CCCCAAGGGC

301 TCCTGGGACA ACTGGACCGT GGAGGTATCT GGACTCGTCA AGCGACCCGC AAGATTCACC

361 ATGGACCAAC TCGTGAACGA GTTCCCCACT CGGGAGTTTC CAGTCACACT GGTCTGCGCC

421 GGTAACCGTC GGAAAGAGCA GAACATGGTA AAGCAAACGA TTGGCTTCAA CTGGGGGGCA

481 GCCGGGGTGT CCACTTCGGT CTGGCGAGGC GTACGCTTAC GCGATGTTCT GAAACGGTGC

541 GGCATCATGA GCCGTAAGCA AGGGGGACTG AATGTGTGTT TCGAAGGCGC GGAAGATCTA

601 CCAGGTGGAG GCGGCTCCAA GTACGGAACC AGCATTAAAA ATGAAATAGC GATGGATCCG

661 TCGCGAGATA TCATATTGGC TTACATGCAG AACGGTGAAC GATTATTACC AGATCATGGG

721 TTCCCAGTGA GGATGATCAT TCCAGGGTTC ATTGGGGGCC GTATGGTAAA ATGGCTCAAA

781 CGAATCATCG TAACCACCCA AGAATCTGAC AGTTATTACC ATTACAAGGA CAACAGAGTC

841 CTCCCTTCAC ACGTCGACGC CGAGCTAGCA AACGCCGAAG CTTGGTGGTA TAAGCCGGAG

901 TACATCATTA ATGAGCTGAA CATTAACT**CC GTCATCACTA CACCATGCCA CGAAGAAATC**

961 **TTACCCATCA ACTCCTGGAC GACTCAGAGG CCCTACACGT TGAAGGGCTA CGCATACTCT**

1021 **GGAGGTGGGA AGAAAGTGAC ACGTGTGGAG GTGACGATGG ACGGAGGAGA AACGTGGCAA**

1081 **GTGTGCAGAC TGGACCACCC AGAGAAGCCC AACAAATACG GCAAGTACTG GTGCTGGTGC**

1141 **TTCTGGTCAC TGGAGGTGGA GGTGCTGGAT CTCATTGGTG CCAAAGAGAT TGCAGTTCGA**

1201 **GCCTGGGATG AGACCCTCAA CACCCAG**CCC GAGAAGCTCA TCTGGAACGT CATGGGAATG

1261 ATGAACAACT GCTGGTTCAG AGTAAAAACA AATGTGTGCA AGCGTCACAG GGGAGAGATT

1321 GGAATCGTAT TCGAGCATCC AACTCTTCCA GGAAACCAAT CCGGAGGATG GATGGCTCGT

1381 GAAAAGCACC TTGTCCAATC CTCTGATGCC AACTCAACTC TGAAGAAGAG TGTCTCATCT

1441 CCTTTCATGA ACACCTCCTC CAAAATGTAC TCCATGTCCG AGGTCAAAAA ACACAACTCA

1501 GCCGACTCCA CATGGATCGT CGTCCATGGC CACGTCTACG ATTGCACCCG CTTCCTCAAA

1561 GACCACCCTG GCGGTACCGA CAGCATCCTC ATCAATGCTG GCACCGACTG CACTGAGGAG

1621 TTCGACGCCA TACACTCTGA TAAAGCCAAA AAGCTTCTCG AGGACTATCG AATTGGTGAG

1681 TTGATGACCA CTGGTTACAC CTCCGACTCC TCTGCATCAT CTCCCAACAC CTCGGTACAT

1741 GGGGCCTCCA ACTTGACTCA CCTTGCTCCT ATCAAGGAAG TTACCTCATT GAGAAGCGTT

1801 GCACTCGTTC CTCGTGAGAA AATCCCATGC AAGCTCGTCT CCAAGGATTC CATCTCACAT

1861 GACGTACGTC GTTTTCGATT TGCATTGCCG TCTGAAGATC AAGTTTTGGG ATTACCCGTA

1921 GGAAAGCACA TATTCCTTTG TGCTGCCATT GATGGTAAGC TGTGCATGCG AGCCTACACC

1981 CCGACTAGCA ACATTGATGA AGTGGGCTTC TTCGAGCTTG TGGTTAAGAT TTACTTCAAG

2041 GGTGTACACC CTAAATTCCC TAATGGTGGC CTCATGTCGC AGTACTTGGA TTCGCTTCCG

2101 TTGGGGGCCA CGCTGGACGT GAAGGGTCCA CTGGGTCACA TAGAATATAC TGGGCGTGGT

2161 AACTTTCTTG TGCATGGCAA ACCCAAGTTT GCCAAGAAGC TGGCCATGAT AGCAGGCGGC

2221 AGTGGAATCA CGCCTATCTA TCAGATTATT CAAGCTGTGT TGAAGGATCC AGAGGATGAC

```
2281    ACTGAGATGT ATGTGGTGTA TGCGAATCGC ACTGAAGATG ATATATTGCT ATGGGAGGAG
2341    CTTGATGCTT GGGCTGAAAA GCATGAGAGG TTGAAGGTGT GGTATGTGGT GGGAGAAAGC
2401    ATAAGGAAGG GTTGGAAATA CAGTTTGGGT TTCATCACAG AGAGTATTCT GAGGGAGCAC
2461    ATCCCATCTG CTTCCGGTGA TACTTTGGCT CTGGCTT
```

NiR

Length 1,299bp

Definition Vitis vinifera nitrite reductase

Source Vitis vinifera (grape)

Clutivar "Jumeigui" (*Vitis vinifera* L. x *Vitis labrusca* L.)

ORIGIN

```
1       GTACTGCCTG ATGTGCCTGA AATACTAAAG GGTCTTTCAG AGGTTGGTTT GACGAGCCTG
61      CAGAGTGGCA TGGACAATGT GAGGAATCCT GTTGGAAATC CTCTTGCAGG CATTGACCCT
121     CATGAGATTG TTGATACACG ACCTTACACC AACTTGTTAT CCCAATTCAT TACTGCCAAT
181     GCTCGTGGGA ATACAGCCTT CACTAACTTG CCGAGGAAGT GGAATGTGTG TGTTGTAGGC
241     TCCCATGATC TCTATGAGCA TCCCCACATC AATGATCTGG CGTACATGCC TGCCACAAAG
301     AAAGGAAGAT TTGGATTCAA TCTGCTAGTA GGCGGGTTCT TTAGTCCCAA ACGTTGTGCT
361     GATGCTATTC CTCTCGATGC CTGGATCCCT GCCGACGATG TCCTCCCAGT TTGTCAAGCA
421     GTACTAGAGG CTTACAGGGA TCTTGGTACC AGAGGAAACC GCCAAAAGAC AAGAATGATG
481     TGGTTAATTG ATGAGCTGGG CATAGAGCAG TTCCGGGCAG AGGTGGTGAA AAGAATGCCC
541     CAACAAGAGC TGGAAAGATC ATCTTCTGAA GACCTGGTTC AGAAGCAATG GGAGAGGAGA
601     GATTACCTTG GTGTCCATCC CCAGAAACAG GAAGGCTTTA GCTTTGTGGG TATTCACATT
661     CCAGTGGGTC GAGTCCAGGC AGATGACATG GACGAGCTAG CTCGATTGGC AGACGAATAT
721     GGCTCAGGCG AGCTCCGGCT CACTGTAGAG CAGAACATCA TAATTCCCAA TGTGGAGAAC
781     TCAAGACTTG AAGCCTTGCT CAAAGAGCCT CTCTTGAGAG ACAGATTCTC TCCGGAGCCT
841     CCTATTCTCA TGAAAGGCTT GGTGGCCTGC ACCGGCAATC AGTTTTGTGG ACAGGCCATT
901     ATCGAGACCA AGGCCAGAGC ATTGAAGGTG ACGGAGGATG TGGGGCGGCT GGTTTCAGTG
961     ACCCAGCCAG TGAGGATGCA CTGGACCGGC TGCCCAAACT CCTGCGGCCA GGTGCAAGTG
1021    GCGGATATCG GATTCATGGG GTGCATGACA AGGGACGAGA ATGGGAACGT TTGTGAAGGG
1081    GCAGATGTAT TCTTAGGAGG TAGAATTGGG AGCGACTGTC ATTTGGGAGA GGTTTATAAG
1141    AAGCGTGTTC CTTGCAAAGA CTTAGTGCCC TTGGTTGCTG AAATTTTGGT AAATCACTTT
1201    GGAGGAGTCC CCAGGGAGAG GGAAGAAGAA GCTGAAGACT GATGAGTGAA AGGAATCGCT
1261    TGGAGAAGAC AAATAAAGAA CTGAAAGGGG GCCTTAGTG
```

GS1-1

Length 1,214 bp

Definition Vitis vinifera cytosolic glutamine synthetase

Source Vitis vinifera (grape)

Clutivar "Jumeigui" (*Vitis vinifera* L. x *Vitis labrusca* L.)

ORIGIN

1 ACCCTTTCTG GACCAGTTAG CGATCCTGCA AAGCTTCCCA AATGGAACTA TGATGGTTCT

61 AGCACTGGCC AAGCTCCGGG GGAAGACAGT GAAGTTATTC TATATCCTCA AGCAATTTTC

121 AAGGACCCAT TCAGGAGAGG CAACAACATT CTTGTGATGT GTGATACTTA TACCCCTGCC

181 GGAGAGCCAA TTCCGACCAA TAAGAGGTGT AATGCTGCAA AGATTTTCAG CCACCCTGAT

241 GTTGCAGCTG AAGTGCCTTG GTATGGTATT GAGCAGGAGT ATACTTTGTT GCAGAAAGAG

301 GTAAAATGGC CAATTGGCTG GCCTGTGGGC GGTTTTCCTG GACCTCAGGG ACCATACTAT

361 TGTGGTATTG GTGCTGACAA AGCTTGGGGC CGTGACATTG TTGATGCACA TTACAAAGCG

421 TGCCTTTATG CTGGCATCAA CATCAGTGGA ATCAATGGAG AAGTGATGCC AGGCCAGTGG

481 GAATACCAAG TTGGCCCTTC TGTTGGCATC TCTGCAGGAG ATGAATTATG GGTGTCTCGT

541 TATATTCTTG AGAGGATCAC AGAGATTGCT GGGGTGGTGC TTTCTTTTGA CCCGAAACCC

601 ATCCAGGGTG ATTGGAATGG AGCGGGTGCG CACACAAATT ACAGCACCAA GTCGATGAGA

661 AATGATGGAG GGTTTGAAGT CATCAAAAAA GCCATTGAAA AGCTTGGGCT GAGGCACAAG

721 GAACACATTG CAGCTTATGG AGAAGGCAAT GAACGCCGTC TCACTGGACG ACATGAAACT

781 GCTGACATCA ACACATTCTT ATGGGGAGTG GCAAACCGAG GAGCCTCCAT TAGAGTTGGA

841 AGAGACACAG AGAAAGCTGG GAAAGGATAT TTTGAGGACA GAAGGCCTGC TTCAAACATG

901 GATCCTTATG TGGTCACCTC CATGATTGCA GAAACTACCA TCCTCTGGAA GCCATAAGAC

961 ACCCATCTCC TCCGTCCCAA CA**GGCTTGTG GGATTGTCTT GTTGGAATTT CCTGTGAAAA**

1021 **TTGTCTCCTT AGAACTGCTT GTCCTGGTTT AATAGCTTCC ATGTGTTTGG ATTACGATAA**

1081 **AGATCAGTCT CATAAAATAA GAGGCTATTG GGGTTGCTCC AATTTCGATC ATTTTATGCT**

1141 **GTCTTATGTA TTATGCTACG GAAATATCAT CATATGATTT AATGTCGTAT TGGTTAGGCC**

1201 **ACCTC**TATTT ACTA

GS1-2

Length 1,180bp

Definition Vitis vinifera cytosolic glutamine synthetase

Source Vitis vinifera (grape)

Clutivar "Jumeigui" (*Vitis vinifera* L. x *Vitis labrusca* L.)

ORIGIN

```
1       AAAGCGAGAA CGCTATCAGG GCCCGTTAGC GACCCCCACA AGCTACCCAA ATGGAATTAT
61      GACGGATCCA GCACAGGCCA AGCCCCTGGA GAGGACAGTG AAGTGATCCT ATACCCTCAA
121     GCAATTTTCA AGGACCCATT CAGGAGAGGC AACAATATTC TTGTCATGTG TGATGCTTAC
181     ACTCCTGCTG GGGAACCCAT TCCAACCAAC AAGAGGCATA ACGCAGCTAA AATATTTAGC
241     CATCCTGATG TCCTTGCTGA AGAAACTTGG TATGGTATTG AGCAGGAGTA CACCTTGTTG
301     CAAAACTCGG TTAAATGGCC CATTGGCTGG CCTGTGGGAG GTTATCCCGG CCCCCAGGGA
361     CCATACTACT GCGGTATTGG TGCTGACAAA GCCTTTGGGC GGGACATTGT TGATTCTCAT
421     TACAAGGCAT GCCTTTATGC TGGAATCAAC ATTAGTGGCA TCAATGGTGA AGTTATGCCA
481     GGACAGTGGG AGTTTCAAGT AGGCCCTTCA GTCGGCATCT CTGCTGGGGA TGAATTGTGG
541     GTTGCTCGGT ACATTCTAGA GAGGATTACA GAGATTGCTG GAGTGGTGGT TTCCTTTGAT
601     CCCAAACCCA TTCAGGGTGA CTGGAATGGT GCCGGCGCTC ACACAAATTA CAGCACTAAG
661     TCCATGAGAA ATGATGGAGG TTATGAGATC ATCAAGAAAG CAATCGAAAA ACTTGGGCTG
721     AGGCACAAAG AACACATTGC TGCATACGGA GAAGGCAACG AGCGCAGACT CACAGGACGA
781     CATGAAACTG CTGACATTAA CACATTCTTA TGGGGCGTCG CAAACCGAGG GGCATCCATC
841     CGAGTAGGCA GAGACACAGA GAAGGAAGGT AAAGGGTATT TTGAGGACAG AAGGCCTGCT
901     TCCAACATGG ATCCATATGT GGTGACTTCC ATGATCGCGG AGAGCACCAT CCTGTGGAAG
961     CCATAAGTGT TTCCAGATGT TGCCGTTGTT CCAGGGGATA AAATTTGAGT CAGTCAGTTG
1021    TGTTATTTTG GTGCTGTGTC TCATTGTTTG CCCTTGTATT TGAGGTAGCA AGGGGGGTGG
1081    GTTTATGGCC CCCTTGCCTG ATCATTTCGC CTCTTGTTAA AATAACCATT ACCTTAGCAT
1141    TAATAACAAC ATTTGAAGGC CTGGCTTCTA TTGTTGCAAC
```

GS2

Length 819bp

Definition Vitis vinifera chloroplastic glutamine synthetase

Source Vitis vinifera (grape)

Clutivar "Jumeigui" (*Vitis vinifera* L. x *Vitis labrusca* L.)

ORIGIN

1 GAGCCCATCC CTACAAACAA GCGCCACAGG GCTGCTGAGA TCTTTGGTAA CAAGAAAGTC

61 ATAGACGAAG TTCCATGGTT TGGAATAGAG CAAGAGTACA CTTTGCTTCA ACCAAATGTG

121 AAGTGGCCTT TGGGCTGGCC TGTAGGTGCC TATCCTGGTC CTCAGGGTCC TTATTACTGT

181 GCTGCTGGGG CTGACAAGTC ATTTGGCCGT GACATCTCAG ATGCTCACTA CAAGGCTTGT

241 TTATATGCGG GAATTAACAT TAGTGGCACC AATGGGGAAG TTATGCCAGG CCAGTGGGAA

301 TATCAAGTTG GTCCTAGTGT TGGTATTGAA GCTGGGGATC ATATCTGGTG TTCTAGATAC

361 ATTCTTGAGA GGATTACTGA ACAAGCTGGT GTTGTCCTCA CACTTGATCC AAAGCCG**ATA**

421 **GAGGGGGATT GGAATGGTGC AGGATGCCAT ACCAATTACA GTACAAAGAG CATGAGAGAA**

481 **GATGGAGGCT ATGAACTGAT AAAGAAGGCA ATTCTGAATC TGTCACTTCG CCACAAAGAA**

541 **CATATCAGTG CCTATGGAGA AGGAAATGAG AGAAGATTGA CAGGAAAGCA TGAAACAGCA**

601 **AACATCAACA CATTTTCCTG GGGAGTGGCT AACCGTGGTT GTTCAGTTCG TGTGGGGCGT**

661 **GACACTGAGA AGCAAGGCAA AGGTT**ATTTG GAAGATCGCC GTCCAGCTTC AAACATGGAT

721 CCTTACATTG TGACCTCGTT ACTAGCAGAA ACTACAATAC TATGGGAGCC AACACTAGAG

781 GCTGAAGCTC TTGCAGCTCA GAAGCTGGCA TTGAAGGTC

Fd-GOGAT

Length 1,249bp

Definition Vitis vinifera glutamate synthase (ferredoxin)

Source Vitis vinifera (grape)

Clutivar "Jumeigui" (*Vitis vinifera* L. x *Vitis labrusca* L.)

ORIGIN

```
1       CCATGCCAAA CATACAGCAG GTATTTGTTA GAGTTGTTAA GGAAGAGAAC ATCGATGATA
61      TTGAAAGAGA ACTATACATC TGTAGGAAAT TGATTGAAAG AGCAGTGAAG TCAGAAACTT
121     GGGGAAATGA GCTTTATTTC TGTTCGTTAT CCAATCAAAC AATAGTTTAC AAAGGAATGC
181     TTCGCTCGGA AGTTCTTGGA AACTTTTATT TGGACCTTAA GAGTGATATT TATAAATCAC
241     CTTTTGCCAT TTATCATCGG AGGTACAGCA CAAATACTAG TCCAAGGTGG CCTCTTGCAC
301     AACCGATGAG GTTACTTGGT CATAATGGAG AGATCAATAC CATACAGGGG AATTTGAACT
361     GGATGCAATC TC**GAGAGGCC TCATTGAAGT CGCCTGTTTG GCGTGGTCGA GAAAATGAAA**
421     **TTCGTCCTTT TGGTAACCCA AAGGCATCTG ACTCGGCAAA TCTTGATAGC ACCGCAGAAT**
481     **TGTTGATAAG AAGTGGCCGT TCTGCT**GAGG AGTCTCTAAT GATTCTGGTC CCGGAGGCCT
541     ACAAAAATCA TCCAACTTTG ATGATTAAAT ATCCTGAGGT TGTTGATTTT TATAACTATT
601     ACAAGGGTCA AATGGAAGCT TGGGATGGAC CTGCCTTGCT TTTATTCAGT GATGGAAAAA
661     CAGTCGGAGC TTGTCTTGAT CGGAATGGTC TTCGCCCGGC TAGGTATTGG CGGACAATAG
721     ACAATGTTGT CTATGTTGCA TCTGAGGTTG GTGTTCTACC GATGGATGAG TCAAAAGTTG
781     TAATGAAAGG CCGTTTGGGT CCAGGAATGA TGATATCTGT TGATCTAACA AGTGGACAGG
841     TGTACGAGAA TACGGAAGTC AAAAAACAAG TGGCCCTGTC AAATCCATAT GGAAAGTGGG
901     TGAATGAGAA CATGCGGTCT CTGAGACCTG TGAACTTCCT TTCAGCTACA GTTATGGACA
961     ATGAAGGAAT TTTAAGACAC CAACAGGCAT ATGGCTACTC AAGTGAGGAT GTCCAAATGG
1021    TTATTGAAAC TATGGCTGCC CAAGCGAAGG AGCCTACATT TTGTATGGGA GATGATATTC
1081    CATTGGCAGT AATATCTCAG AGGTCTCACG TGCTTTATGA TTATTTTAAG CAACGCTTTG
1141    CACAGGTTAC AAATCCAGCT ATTGACCCTC TCAGAGAGGG ATTAGTTATG TCTCTTGAAG
1201    TAAATATTGG GAAGCGTGGG AACATATTGG AGGTTGGACC AGAGAATGC
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NADH-GOGAT

Length 1,479bp

Definition Vitis vinifera glutamate synthase (NADH)

Source Vitis vinifera (grape)

Clutivar “Jumeigui” (*Vitis vinifera* L. x *Vitis labrusca* L.)

ORIGIN

1 TGACGGAAAG ATCCCACCTA AAGCAAGTGG TGAATTCCAC TCCAAGGATG AGTTGGTCAA

61 GAAGTACTTC AAAGCAAGCA ACTATGGGAT GATGAAAGTT CTTGCCAAAA TGGGGATATC

121 AACTTTGGCC TCTTACAAGG GGGCTCAGAT TTTTGAAGCT GTGGGTCTTT CATCAGAAGT

181 GATCCAGAGG TGTTTTACAG GAACTCCAAG TAGAGTCGAG GGTGCAACAT TTGAAATGCT

241 TGCACAGGAT GCGCTTGAGT TGCATGAGAT GGCATTTCCC ACCCGGGTTT TCCCTCCAGG

301 AAGTGCAGAG GCTGTAGCGC TGCCCAATCC TGGGGATTAT CATTGGAGAA AAGGTGGTGA

361 GGTTCACCTG AATGATCCCC TTGCCATAGC CAAGTTGCAA GATGCTGCCA GATCTAATAG

421 TGTGGCTGCC TACAAAGAAT ACTC**CAAGCG CATACAGGAA CTGAATAAAA CCTGTAATTT**

481 **GCGTGGACTT TTGAAGTTCA AAGAGGCAGA AGTGAAGGTT CCTTTGGATG AAGTGGAACC**

541 **AGCCAGTGAG ATTGTGAAAC GATTTTGTAC TGGTGCCATG AGTTATGGAT CAATATCATT**

601 **AGAGGCACAC ACCACCCTGG CTATTGCTAT GAACAGAATT GGAGGGAAGT CAAATACAGG**

661 **TGAGGGAGGT GAGAATCCAT CTCGTTTGGA GTCTCTCCCT GATGGATCAT TGAATCCAAA**

721 **AAGAAGTGCA ATTAAGCAGG TAGCCAGTGG GAGATTCGGT GTTT**CAAGTT ATTACCTTAC

781 TAATGCTGAT GAACTGCAGA TAAAGATGGC TCAGGGAGCA AAGCCTGGTG AAGGAGGTGA

841 ACTTCCGGGT CACAAGGTTA TTGGAGATAT TGCAGTTACA AGGAATTCCA CTGCTGGGGT

901 GGGATTGATC AGCCCACCTC CGCATCATGA TATCTATTCA ATTGAAGACC TTGCCCAATT

961 AATTCACGAT CTTAAGAATG CTAATCCATC CGCCCGAGTT AGTGTGAAGC TGGTATCTGA

1021 AGCTGGTGTC GGAGTGATTG CTAGTGGAGT TGTGAAGGGA CATGCTGACC ATGTCTTGAT

1081 CTCTGGTCAT GATGGAGGTA CAGGGGCTTC TCGATGGACT GGGATCAAGA ATGCTGGGCT

1141 GCCATGGGAA CTTGGCCTTG CTGAGACCCA TCAAACTTTA GTTGCTAATG ACCTTCGTGG

1201 ACGCACGGTT CTCCAGACAG ATGGCCAGCT GAAAACTGGC AGAGATGTAG CAATTGCTGC

1261 CCTTCTTGGT GCAGAAGAAT TTGGTTTTAG CACTGCTCCC CTTATCACAC TTGGGTGCAT

1321 CATGATGCGA AAGTGTCACA AAAACACCTG CCCAGTTGGC ATTGCAACCC AAGATCCAGT

1381 TCTTCGAGAG AAGTTTGCTG GAGAACCCGA ACATGTCATT AACTTCTTCT TTATGCTAGC

1441 AGAGGAGGTA AGGGAGATTA TGTCTCAGCT TGGGTTTCG