

GENOTYPING BY PCR PROTOCOL

MUTANT MOUSE RESOURCE & RESEARCH CENTER: UC DAVIS

mmrrc@ucdavis.edu

530-754-MMRRC

Protocol Name: B6;129S5-Sidt2tm1Lex/Mmucd **MMRRC: 031620-UCD**

Protocol:

Reagent/Constituent	Volume (μL)
Water	5.6
GoTaq® G2 Colorless Master Mix, 2X	7.5
Primer 1. (stock concentration is 20μM)	0.45
Primer 2. (stock concentration is 20μM)	0.45
DNA (example) extracted w/ "Qiagen DNeasy columns or other similar silica based kits"	1.0
TOTAL VOLUME	
15	

Comments on protocol:

- Protocol may work with other DNA extraction methods.
- Use Touch-Down cycling protocol-first 10 cycles anneal at 65°C decreasing in temperature by 1.0°C; next 30 cycles anneal at 55°C.

Strategy:

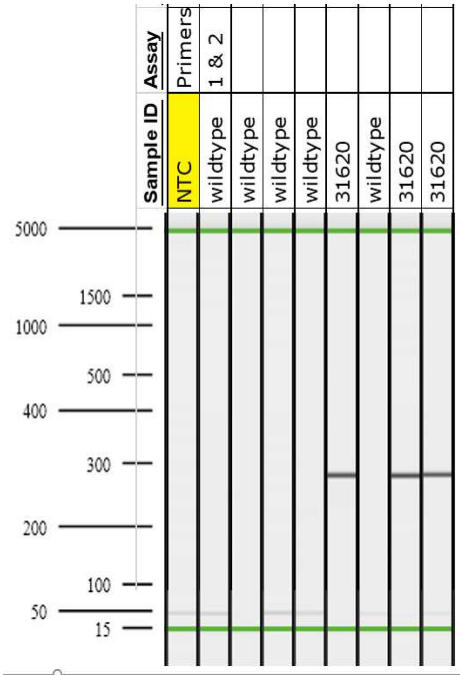
Steps	Temp (°C)	Time (m:ss)	# of Cycles
1. Initiation/Melting HOT START? ☐	94	2:00	1x
2. Denaturation	94	0:10	
3. Annealing steps 2-3-4 cycle in sequence	65 (↓1°C/cycle)	0:30	10x
4. Elongation	68	2:00	
5. Denaturation	94	0:15	
6. Annealing steps 5-6-7 cycle in sequence	55	0:30	25x
7. Elongation	68	2:00 (↑20sec/cycle)	

Primers:

Electrophoresis Protocol:

Name	Nucleotide Sequence (5' - 3')	Argarose: 1.5% V: 90		
1. UNQ685-6	CCGCTGATATCTATGGTCCAAG	Estimated Running Time: 90 min.		
2. Neo3A	GCAGCGCATCGCCTTCTATC	Primer Combination	Band (bp)	Genotype
3. UNQ685-5	CCGCTGATATCTATGGTCCAAG	1 & 2	285	Mutant
		1 & 3	327	wildtype

GENOTYPING BY PCR PROTOCOL
MUTANT MOUSE RESOURCE & RESEARCH CENTER: UC DAVIS
mmrrc@ucdavis.edu
530-754-MMRRC





Lexicon Genetics Incorporated – Genentech Project Materials

Genentech ID:	UNQ685	Date of Submission:	10-10-03
Lexicon Contract Name:	DNA269	Mutation Type:	X Standard Knock out
LexVision Name:	MEM687N1		☐ Conditional
Reference accessions:	NM_172257	Is this gene X-linked?	No

Required Materials: ☐ pKOS clone DNA(s) __KOS59, KOS69_____
☐ Target Vector DNA __KOS59TV_____
☐ Targeted ES Cell DNA __2F10_____
☐ Genomic Map

Southern Blot Analysis: *External/Internal Probe Strategies*

	<u>5' External</u>	<u>3' Internal</u>
Name of Probe:	12+13	23+24
Restriction Enzyme for Genomic Digest:	KpnI (Acc65I)	MscI
Predicted Wild-type Band (kb):	9.1 kb	5.5 kb
Predicted Mutant Band (kb):	6.1 kb	5.2 kb
Probe Size:	233 bps	500 bps

PCR Strategies:*For standard knockouts, give wildtype and mutant-specific strategies**For conditionals, give 5' loxP and cre-excision strategies*

Wild type-specific (absent in targeted allele)		Mutation-specific product (absent in wt)	
5' Primer Name:	5	5' Primer Name:	Neo3A
3' Primer Name:	6	3' Primer Name:	6
Predicted Wild-type Band (bp):	327 bps	Predicted Wild-type Band (bp):	none
Predicted mutant band (bp)	none	Predicted mutant band (bp)	285 bps

5' loxP strategy		Distinguish Cre-excised and wt	
5' Primer Name:		5' Primer Name:	
3' Primer Name:		3' Primer Name:	
Predicted Wild-type Band (bp):		Predicted Wild-type Band (bp):	
Predicted mutant band (bp)		Predicted mutant band (bp)	

Primer sequences:**Southern probes**

12 5' – CAGACTGGCGTTTCTTAGTG
 13 5' – GCCTCTGCAACAGACTAGC
 23 5' – AAGGCTCTTCTCCCCTCGTA
 24 5' – AGGGTGTGGAGAGGCATCTA

PCR Genotyping

5 5' – GCGAGTGTCTGTGAATGTCC
 6 5' – CCGCTGATATCTATGGTCCAAG
 Neo3A 5' – GCAGCGCATCGCCTTCTATC

Genomic Sequence Deleted:

CGCGCCCGGTGCGCGTCCCGTCGCCAATCCCCGCCGTCCCGGGCCATGATCGCCTGGCGTCTGCCCTTGTGCGTGCTCTT
GGTGGCCTCCGTCGAGAGCCACCTGGGGGCCCTGGGGCCCAAGAACGTCTCGCAGAAAGACGCGGAGTTTGAGCGCAC
CTACGCGGACGACGTCAACAGCGAGCTGGTCAACATCTACACCTTCAACCACACCCGTGACCCGCAACCGGGTGAGCGC
GGGACTCCACGGGGCGGCCGAGCGGGTGGGCGCCCGGCCTGGACTTGATGCTGCCTCTGTCTCTCCGCCAGCCTTTGAG
CCGCCCTCCCCCTGCCAAGACCTGGTTTCCACCAGCATTTCCCGGGCAGCTCCAGCGGGGCAGCTTGGGAAGTTCCCTGC
CACCAGCTGTGATCAGGACCGGTCTGGTCTGCTCCGTGACCTGGCTCTCAATCTAGCTCTCAGTCTGTGAGGTGCGGGT
GAGGGGAAAACAGGCTCCCAGCCTTGGTGGCTCAGACAACTCCAGATGGGGCCAACTTAGAATTGAAAGAGCTCGGT
CACAGGGAGGTGAAGGAGACAGACCTCCTTGCCTCAGAAAGCCAGCTGGCCTTGTAAGTTGAAGGTGACAAGATAAGG
CCCTCGAAGGCTGAGTGGCAAGAGAAAAGGGAGTTTGTCTTAAGACAGAACTATCTCCGACTTCTTACTCATTTCTTC
CCAGTAGTGAAGTAGAAAGAAGGCTGGCAGAGCTGGGCCCAGGCAGAGCACAGCCTGGGAGATTCTTGCTGCCTGGC
TGTGTGGCCTGCCTAGCTCTCTTGCTCATTCTCCAAGGCCGATCTGGATTGACTCGGAAGCACTGGAGTTGAGGAGGA
GGCAGCTGAGGCTTTCTTTGGGAGGGAGAGGAGTTTGGTTTCTGGCAGGCCATGATCAACCATCAGGATCCATTTCTT
GAAGTCTGATCTCCCTTTTGGAGTACCATTTCAGGATCATCCCGGAAGTGGCACCTACCCCTCAGGGAAACGTTACCC
CTAGATTTGGTTTCAGCAACCTAGTAACTAGTTGTCTGCAGTTGTGATTTCTTCACTTTTAAACGCCCACTGTCTGTGT
AGCTTTGTCCGCAGCAGAGAGGGTGGGTTATTTCTTTATTTTCTTAGAGAGGGTGAATCAAGGTTTCAGATGGAAAGTCA
CTTCAGAGCTTGGCCCATGGTCAGAACTAGAGAGACAACTTGTATTTTCGACACAGTTCCCTACACCCCTCCCTGCAGGG
CTCTGGCCTCCAGAGTAGCAGTGAACCGGAGCTTCTTGCTGCTTTCTAGTTTCATGAGGAAGAAGATTGAGGGCTTGA
GGGCACGTCTTGATCTCCCGGTGACAAGTGTGTGCACAGGGGACGTGTGTAGACACGTGTCTATAACATGTGTGTGCAT
GTGGGCTATCTGGAACCTTCTAAGGTCTCCGCTGCATATCCCTGCTGTTGCCCGGGTCTGCTGCTCTGTATACCCGTT
CTTCCAAGAGCGAGCTTCTTCAAGCCTCGGACCGGACAGAGTCAGTCCCTTCTAGAAACTCGGCCTGTTCCCTCACAAG
GAGAAGCACAGACAGTGTCTGGCTGGCCAGGATGGACGGCACAGGGCAGAGCTCAGCCTGCAGTCTGTAGAGTCATG
TGTCTGAGGAACAGAGAGCTGGGTTTGAAGAGGATGCCTCCTTCTCTGCAGACCGAGGGTGTGCGAGTGTCTGTGAA
TGTCTGAACAAGCAGAAAGGGGCGCCTTTGCTGTTCTGTGTCGCCCAGAAGGAGGCTGTTGTGTCTTCCAGGTGCC
CTAATCCTTCGAGGACTGTGAGTAAGACCTGGGGATGTAGGGAGGGGCATCCTTGCCAGGTTTTTCAGGGACCCTCACCC
GGGAACCTTTTTGTTTTCTCCCTTCTCCCTGAG

Genomic Locus: (the deleted sequence represents nt 10007-11933 in the sequence below)

GTGTGAGTAGAGCCAGAGAGCTATTGCTTAAGGAGCTTAGAAATCCAAGGCAGGCAGACCTACGTGTACAGAGAAAA
CAAACAAAAGAGATTCAGAAATTGAATATTACATTCTCTCCGAGGTCATCCTGACTTATATAGTTGCGCCCAGCTTTGA
GCCAGCTCTCCCTGACTTCTTGCCCGTGTGCTACTCATTGCTCTAGATTCTGAGGATCTAGTTGCCTCAGGTGAGGGTGC
TAGGATCGATGTGTCTTCTTCTTCTGGGTGAGGAAGCAGCTGTTTGGTCTTTCTGCTGCTAGTGTCTCCCTTTCAGTCCTA
GCTTTTGTGTGGCCATAAAAAATAGATTTACTTAAAGTGCAGTGTCTGGTTCATCTGACTTGCAACCTTCAATCAGCACTAA
AATTAAACATGGAACAAAATTTGTGCTGATATACCTAAGGGGTTTGGGAGACTACAGAGCTCTGTGTTAGCATGTGAG
AAGAAGATACTACTTAGATAAAATAAAGTTATAATCTAAAGAGAATGTGGAGGCTTACAACTAGTCAAATAGAATTCTC
TGCATATCAAATCCTTTTAATACCCAACAAGATGATTTGTTTGTGATTTTGGCATGTAGCTCAGGCTGGCTTGAATCC
CTTGTGTAGCTAAAGATGATCTGGAGCGAATCATCTGCTTCTATTTCCCAAGTGTGAGGGTACAGTGTTTACCACCAC
ACCTAGCCAGAAAGAAAGCTTTAAAGTAGGCAGTTTGTCTGCTTCCAATGACATTGGGGTGGAGATGGGGACATAATC
ACAGATGAAACCTCACATGAGGTCTTATTACAGACCTCTAGAAGCCATGACTGCGTCTTTGGCATCCTTCATACGGGGA
AGGCTAGAATTGTTTTGCAGATAGTTTAGTCTGAATGTGTGCTGTAGACTGTCTTATCAGAACTGAGTGAGTGTGATCA
GTCCCATAGATGACAGATGATGCCAGCATAGGATGTGAACCTTGGACGGAGCCTCATTGGCCATGTCTCCCAAGCGG
AGGGACTAGACCAAGGTACTCGTCCTGATGACACAGCAGCAGCAGTAGTTACAGCTGGAAGATATGGCTACAAATT
TCTGTGGCATATTCCCTTAACCACTCTGCCATAGTCCTGCTGCATTAATAATGCAGGCTACAAATGTTTATAGAAATAATA
ATTCAGGATGGTTTTGTTTATGACACGTTAATGCAAAGTTCTTCTCCACCCAAGTTCCACAGGCCTTACCTTTGTGAGT
TGCTAAGAGGCCCTCTTAGATTATTTTATAGATGAGGTCTCCTCCTGCTGGAATTACAGACTTGGACCACTTGCCTCTGC
CTGATCACATTATGTAGCCATTCTGAATGAAAGATGTTTGTGTTAGCTGAACAATGTTTGTCTTTGATACAGTGTAAAT
CCCACATAGGCCTCTGGCCTCATTTCTGGCTCATTTAACTTAGTTTATTTATAAACACAATTTTCTAAAACCAGGTTT
TGCTATATAGCCCTGGCTGGGCTCACACTGATGACTTTGCCTCAGCCTCTTAGGTTCTGAGATTACAGGTCTGCACTACC
ATGCCTGGCTTACACAAAGACACTTAACACTGAGTCAACACACTAGTAAAGAATCAAATACAACAGCATGCTTGTGCG
CAGTCTCTGGCTTACACGGTCAGCCTTCCCTTCCATACATAAGTACGGCTGTTCCAAGGTGAGACTACTCTCTGAAATAT
TGTTTCTGTCCCTTAATTGGTTAGTCCTTCCATCTTTTATCCCAATAGGGACCCGTGGAGTGTGTTGCTGATTCTTCCATT
TCTAGCTCCAGTCTGTCTTACTGCTCATGTCTATGTTCTCATAATGTCCTCCATAAACTTTTTTTAAAAAATAGTATTTTT
GTTTGTATTTTTTAAACTACATATATTTTTGAGTGTGCACACATGCCACAGTAACCCAAGGCAGCCTTATAGGAGTTGG
TTCTCTTACCATGTGGGTTCTAGTTATGGGACTCAGTTCTTTAGGCTCTGCAAATTGCCTTGATCTGCTGAGCCATCTTCC
AGGCCTACATAAATAGTGAAGGTGCTTTAAGGCTCTCTGTTCTAGCACAGTTTATAGGACAAGTACAGGCCAGGCAC
TGAATAAATAAATAATGAATGAATGGGGCTGGCCGTGGTGGTGCACGCCTTTAATCCAGCACTTGGGAGGCAGAGG
CAGGCGGATTTCTGAGTTCGAGGCCAGCCTGGTCTACAAAGTGAGTTCCAGGACAGCCAGGGCTACACAGAGAAACCC

TGTCTTGAAAAACAAAAACAACAAAAAATAAGAGAGGCTAGACTGGTTTGGAGA
TAATAGGAATGAGGAAATCACCTGGAAGACTTGAGGCCAGTTCGGTAAGAGAAGGTGTAAGAGGTAAGCCAGTGTAT
AACTAAGAAAAGGGCAATAGGACTGTAGAGTTGTTTGTAAATCTAGGATGTGCCAGAGACGGGCAAAGCTCTTAGCAGC
ATCCTGACTCAGTAGCTCAGGGCTCAGGCTTTTCTGCAGGTGAAGATCTGGTCTCTTGGCAGTGATCCTTAGAGGCACA
GATTTGAACTGATCTATTATTTATCCACTTGTGCACTGCAACCTGATGCCCAGGCAACCTTTCTTGAAAGCTCTTTTCGG
TTCTGTACATGGCCAGAGGGAAGCAGATACAGGGACTGAGTGAAGTGAAGCTTAGGGAACAGAAA
GTAACATCTTCCTCTTGCAAGAAACCTGCCATTGCTCAGAGCAATTCTCTCTCATTTCCTTGCCAATTTTTAAAAAT
TCTTCCCTTGCTCACCCACCCCTTATACTCACCCAGCACTGTAGATTGAATCCAGGCTCCTAGCATACCAGTCAAGTAC
TCTACTACTGAACATACATTCATCATAAGCCCTTTTATGTTTTGAGACACATCTTACTGAAGTTTTTCAACAGGCTTTGA
ATCTGTGGTCTCTGCTCAGCCTCTTACTAGCTGGGATCTCCAGGTCTGTGCCACCAAGCAAAAGCTCCCCTTCTG
TCTTTAGTTAAGATGCACAGCAGGCTCTGTGCCATCTGTATAGTAAGGACCACAGCGATGAGGCTTGGCATGTCAGT
GCAGGGTCTGAACTAGATTTTCTGACATCACACTACCTTTGGGATTGTGAGACAGTCTATATAGCTCACACTTGTCTCT
AAATTCATGATCTTCCAACCCCTGACTCCAGAATGCTAGTTATAGGACAGTGTTAAAATACACAGAAGTCTTGCCTCTT
TTGGTGATGTGAAGGATAAACTTAGAGCCCCACATGTGCTAGGCGAGTTTTTTTACTTCAGATTCTTGGGGTTTTGTT
TGTTTCTAAATGGGCTTGGAAGATAATCAGTAAAGTGCTGAACCACTTAGGAAGCAGGCTTGAGTTTGATCCCAGAACC
CGTGTAAGAGCATAGTGGAAGCACTTAGAATCCGTGGCTGGGACAGCCTAGGTGGGAAGATCCCTGGGCACACTGGC
CAGTCAGCCTAACCTGCTTGATAAATCTCAAACACCCAGAGACCCCTTCTCAAACAACCGTATAAGGAGCCTGAAGA
ATGATACCCAAGTTGACCACTAGTTTTTACATGCACGTATTTGTGCACACACAGAAAGTCTTTTCTCTGAAGCTAT
GTGAGGGTTTGAGACGCCTCATAGTGGCAGAGTAAGTCTTGTTCAACTGATTCTTGGCCTGACATAAAGCCCTGAAGA
ATCAGACACCGAGCGGTCCAGGGGAGACGCAGAACTTGGGTGATGGAATAACATGCTTGTCTTAGCTAGGGTTTCATT
GCTCTGAAGAGACATCATGACCAAGGCAGCTCCTACAAAGGACAACATTTAATTGGGGCTGGCTTACAGGTTGAGAGG
TTCAGTCCACTTTTCATCATGGCGGAAGCATGGCACTGTGCTGGCAGACAAGGTGCTGGAGGAGCTGAGAGTTCTACAT
CTTGATCAAAAGGCAATAAGGAGACAACCTGTCTTCTGCAGGCAGCCAGGAGGAGGCTCTTTATAAGAGTAAACCACAG
GACTGGGCCCGGTGCTAGGGTTATTTGAGATTTCTTTGTCTAGTACAGTTAATCTAAATCTCTTCACCTTAGCCTCAGGCA
GACTCTTAAGACAAGGGCAAAAGGTAGCCACATTCTTCAGCAAAATGTCACAAGAACAATCTCTAGGCAATATGTTAA
AATTCTCCTTTGAAACCTTTTGAGCCAGGACCCACAGTTCAAATCACCTCAATTACAGCTATCTTCCATGTTCCAATA
GTATGGCTTATTAAGCCCCATTTAAAGCTTTCTGCTGCTTTACTATCTAAAGCCCCCTAAATGTACATTCTCCAAATAAA
ATCATGGTCAGGCCTATCACAGCAATACCCAGTCCCTGGTACCTGCTGGTCTTAGGGCTTCTATTGCTGAGACAAAAC
CCCGGGACCTAAATAAGCAAGTTGGAGAGGAAAGGGTTTATTCAGCTTATACTTCAGATCACAGTTCATCAATGGAGG
AAGTCAGGGCTGGAACCTGGAGGCAAGAGCTGATGTAGAGAGCATGGAAGGTGCTGCTTACTGTCTTGTCTCGCAAGGC
CTACTCAGCCGGCTTTCTTAACCAACAGCCCAGGGGTGGCACCACCCACATTGGGCTGGGCCCTCTGGAATTGATCAC
TAATTGAGAAAATGTCTTACATCTGAATCTCATGGAGGCGGGTCTCAACGGAGGCTCCTTCTCCATGATGACTCTAA
CTTGTGTCAAGTTGACACACAAAACCGACCCATAGAGTGCCAAGCCGGCCCTTCTCATGGTCACAGGAAAACAGGGAA
CTTGAATGTGCTTCTTTAGAGGCTTGGTTTCGTAATCATTCTCTCTGGGTAAAGTCACACCATTCTAGGTAGCTAAAT
CATGTATCTGATTGCATGTGCTTAGTCTGTCTGCCAGGCCAGGCTGGGTTAGGAACCATGATGCTGTCTGGTGAGTG
CTCCCTTTCTCTTGCCCCACCGGAAGAGAGGAGTGTTCTAGGCCTGTACGCCTGGCTGTACCTTTAGGGTACAGGAT
TGACCTGAGCTTTTATTGGTTTGATTGGTTTTGTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTAAAGATTTATTTAT
TTATTATATGTAAGTACACTGTAGCTGTCTTCAGACACTCCAGAAGAGGGAGTCAGATCTCGTTACGGATGGTTGTGAG
CCACCATGTGGTTGCTGGGATTTGAACTCCTGACCTTCGGAAGAGCAGTCGGGTGCTCTTACCCGCTGAGCCATCTCAC
CAGCCCCCTGTTTTTTTAAACGATTGGTCTTGTCACTGAGGCTGGCCTTGAACCTCTTTCAAAGCCGGGATTACAGGTATA
TGTCACCATGCCTGGCAGGGCTGATCTTTTCTTGTTAATATGGCAGAGAGTACAATAGCTGGACTTTTCATAGAAGGCCA
GAGCCCTTTCTGAGCTTCCCTGTGGACCCACAAGTCTGGCTTTGAGACCCAGCCCTGCCTTTTCATGCTGACTGCTATAG
CCAACAAGCTGGCCTTCTCTCTACAGGCTTCAGAAAGGACCTATTATAACAATCGCTCCCTAGAGGGAAGGGCAGA
AGCAGAGGAAAGCTCTGGGCTTCTGCCCTTGCCAAGGGTGTGGGTAACCAGGGTCTTGCTTATTCAGAGGTTAAGCCC
TTGAAACCTTGATCAAGGGAAGGATCCTTTCTGAAAGAGCCAAGTGTGGTAGCAAGAGCCTGGAATCCCAGCATTTTG
AAAGGCTGAGACACAACGACTACCATGTATTTGAGGACAGTCTAGCCTGCAGAATGGGTGTTAAGCCAGCTAGGGTTC
CATAGAGAGACCCTGTCTCGGCATGCCTCCTTGTGCCCACCCTCCCTACTAAAAACAAAAACAAACTAAACAAAA
CAAAAACTAACAGAAGAAAGAAACCAAGTAGGAATGTGGATACATCCCAGTTGTTGTATATCCTAATGGCAGTCTCCA
ACTTTGGTGCAAAAGCTCTTAATATGTGTTAACATGCAGACATCTGTTCTCAGCTCCAGACTGGCGTTTCTTAGTGATT
TTAAGTGTCTTACTCTGTAACCTCAGGATATCCTTGAATTCATGATCCTACTTCTGCCTCACAATACTCTGAGTATTGTC
ATGACCCACCATGACTGGCACTCATCCAAGGGCCACATTCAGAATGCTGCTTCTTGCCCTCCCTCCACTCACAGCCTGA
GTTAGTATCCTTAAACGCCAGCTAGTCTGTTGCAGAGGCTGATCTCGAAGTTTATGTTTTTTCGAAGGCCCCAGGGAAG
GTTTTGGCCTACAGTAATTTAAATGATATCAGGCTGTTAAGTAAGCACCCAGGCTCAGTGTGAGGGTGTTTCTTGGAAT
TTCTGAGTATTTACTGGCAAGATGAGCGGGGTCAAATGAGGCCAAATTGGCACATGGAACCCGTTCTAATTATCTAGG
TGGGGTGCCAGCTGCTTGAGAGGCTTGTGTGAAATCACTCTTGTCAATTTGAGGGTTCACAGACCCTGGCTTTGTTGAG
GTGTGCTGGAATGAGGACTGAAACAACCTGCAAACCTAGGAGTCGGGGCTGGGGTCTCAGCCTAGTAGCAGAACACAT
AATTAACCCCCAGACTTAATTCCTTTTTTTTTTTTTTTTTTTTTTTTTTTTGGTTTTTCGAGACAGGGTTTTCTGTATAGC
CCTGGCTGTCTAGAACTCACTTTGTAGACCAGGCTGGCAGACTTAATTCTTACCCGTAATCCCTCCCTTCTCCCAAAAA
ACAATGACCATGGCAGGCTGCTAATGAACCTTCTGGGTTTTACTTGACCCGTTTGTACAATGACAAATTGCCCTGTTGC

TCGTCCAGGACACCTTGTATTACCAAGACTAACTGCACTTTGGCTCTCTATGCCACAGCCTCCCAAGTAGCTGGGATTGTG
 CTGCTCCTGCTGTGGTCTACTTCTTCAAACATGCTGTGCTTAAACAGGCCAGTTATAATTCTGCTTTTTACCCATTAATTT
 AGAAAAGGGCATAGTAGGTACTTATTAATAGTTGTGGGAATTAATAAATATTTATAGCTGGTAGTTGGAAGAATGTCCC
 CTTAGAAGACAGTCCAGACTGCTATAATCTTGTCAATGGATAGTACTCTGAGAAAGGGGGTATTAGCCTACATGCTCCC
 AGCCAGGACATCTGACAGCTTCAGGGTTGGCCATATTTTTTTGTATAAAGATTTATTTATGTATTATATGTAAGTACACTG
 TAGCTGTCTTCAGACACACCAGAAGAGGGGCATCAGATCCCATTACAGGTGGTTGTGATACCCCATGTGGTTGCTGGGAT
 TTGAACTCGGGAGCTTCGGAAGAGCAGTCAGTACTCTTAACCTGCTGAGTCATCTCCAACCCATTTTTTTTTTCTTTAAACA
 CAAAATTTGTCTACAGAAATACAATACATCCAATTATAGCACACGTTATTTATTTACTTACCATACTGGGGGTTTGAAG
 GGACTCTGGCAGCTTGAGCTTGGTGAGCATGGCTTGGCAGGCCTTGCCCTTCTCCCCCATTTGTCTTTCTAAAAAAGACAT
 TATACATTCCTAAAGCTAGCCCCCAAGGTCTGTTTCCTTAATTTAGCCAATCCTTTACCTGAGGTTGATTACCAAGGTCA
 TCAAAGTGTTGAAGTCCAGCATCAAAAGCTCCCTTTGGGCTGGTGAGATGGCTCAGTGGGTAAAGAGCACCCGACTGCTC
 TTCCGAAGGTCTGAAGTTCAAATCCCAGCAACCACATGGTGGCTCACAACCATCCGTAATGAGATCTGACTCCCTCTTC
 TGGAGTGTGCTGAAGACAGCTACAGTGTACTTACATATAATAAAAAAAATAATAATAAATCTTAAAAAAGGATGCTGCTG
 CTCCCTTTGGCTCTCCTAATTAACGTGCCCAATTAATAAATAAACGCCTCATCCTAACATGGAGTTTCCCATTTTACCTTT
 GTAAACCCCTTCATTTCCCTATGGGCCACATTTGTCTCTCTCTAGCCAGAGGCAGTCCCTTTGTCTCTCAAATACCCCTTT
 CCTTTTCCCTCATCCACTGTCTCTGTCTTTGTCTCGTATTTCCATGCTTCTGTGGCAAATCAATCTTCTTTGTGCTGAG
 AACTTGGTTTGGGGCTCCCTGAGCCGATACCTTTTCTAACAGGATGGAACCCAAGGCCCTCGTGTGTGTGTGTGTGTGTGT
 TGTGTGTGTCTGTGTCTGTGTGTGTGTGTGTGTCTTTGTAATGACCTTTAATTACATATTGTGTATATGTGTATGTTTCA
 GGTGTTACAGCATGCATGTGGAGGGCGGATGACAACTTGCAGAGTCAGGTTTTTCTCCTCTTCCACCTTTTGGGTCCCA
 GAGATGGTCATCAGGCATCTTGGAAGCACCCGCACCCACTGAGACACTTCATCCACCCTTGTACATATGTGTGTGTGT
 ATATATATATGTGTGTGTGTGTGTGTGTAT
 GCCAGGTGTCTGTGGAAGTCAGAGAACAATTTGTGGAGTTAGTTCTCTCTCCTCCCTGGTGCAGAGCTCAGGCCGGCCTT
 TCCATGGCAAGTGCCTCTTCTGATAAGCTACCTCAGCTCGGTTCTTGTGTATATTTTCTATTTATGTCTGAAGTTTGA
 TTATATACCACTTATATAATGTTATTGAATTCCTCCTTAGATGTCCCTTTGATGGTATTAAGAATCTATCTGCTTAACTT
 CATAGTAGTATCTCTGACCACCTCTTCTTCACTGTGAACAAGCAGTTTCTTTGAGCTTTCTCAAGATCACAGGGATGC
 AAATTGCTGTCCCATATTTTATTTGTATTTCTTATTCTGATAGGACACAGTCCCTGGAGTGGAATGACTGGGTTGAAGGGT
 ATAGAGCTCTTTTAAAGCCTAAGTTCCCTCAGAAAGGTTTTTGCCAGTTGACAACGAAAGGTCAGAATCTTCCGTGGGCT
 TTGTTCAAACAAACAAAGCAGTTTCTGCAGAGTAGGGACAGAGCTCACAGGTTGGAAGGCATCCTGGTTATGGTGCCC
 TGGTTCTGGTTATCCCCTCTACTGTGAGAGGGGAGTGGCCGCTGAGCTGCTCTCAGTGGGCAGGCGCTTTTATGAGCCA
 ATGAGGGAAAAAGAATGATGCTGGGGTAATGATTTTGGAGCACAAATTCCTGTCTTGAGCAAAGAAATCATCTGTCAGC
 AAGACCTGCACTTACTGGGCTCTGTGAATCTTGCCAGCAATGCCAACACCCAGCAGTAGAGGTGGGAGGAGGATCAG
 GCGTTCAAGACTCTCCAAACTTACACGACCAGTTCCAGACCAGCCTGAGTTATGTGAGCCGTCTCAAAAAGCCAAAAA
 AACGCAGACCACAAAAGCAAGAATCCAATACTTAGTGATCCTTCGTGAAAAACCCAACCTCCAGACGCTCACAGGACAA
 CGAAGGAAGGAGGCGGCGACGGCTGCGTGGAAGTAGAGGCAGCCTGGCCCTTTAAATCCGCGTCGGTTTCCCATGAC
 GTAAGCGGGCGGGCACAGCCCGCTGTTTACCGCGGCGCAGCTCCTGGTAGCTCCGAGTTCTGCGCGCGCTCCGCGCGCC
 TTAAGGGCCCGCGTCCGGGAAGCTTCCGGCCAGGCCCACCGCCGCTCGGCTCTCCGGGCGCAGCGGACCGCGGG
 TCTCCAGCCGGGCTGGGCGGGCTGGGCGGGCTGGGGTAGCGGGTCGCGGTGCCGCCCTCGCGAGCCGGGATCCGCG
 CGAGGCCCAGGAGCGGCTCCAGGGAGGGGACGCGTCTATCTGAGGCCGGGGTTAAAGTTCTGGTCCCGGTGAGATGC
 TGGAAGCTGCTGCGGCAGCCGCAACGCGCCCGGTGCGCGTCCCGTCCGCAATCCCCGCCGTCCCGGGCCATGATCGCCT
 GGCGTCTGCCCTTGTGCGTGCTCTTGGTGGCTCCGTCGAGAGCCACCTGGGGGCCCTGGGGCCCAAGAACGTCTCGCA
 GAAAGACGCGGAGTTTGAGCGCACCTACGCGGACGACGTCAACAGCGAGCTGGTCAACATCTACACCTTCAACCACAC
 CGTGACCCGCAACCGGGTGAGCGCGGGACTCCACGGGCGGCCGAGCGGGTGGGCGCCCGGCTGGACTTGATGCTGCC
 TCTGTCTCTCTCCGCCAGCCTTTGAGCCGCCCTCCCCCTGCCAAGACCTGGTTTCCACCAGCATTCCCGGGCAGCTCCAGC
 GGGGCAGCTTGGGAAGTTCCCTGCCACCAGCTGTGATCAGGACCGGTCTGGTCTGCTCCGTGACCTGGCTCTCAATCTA
 GCTCTCAGTCTGTGAGGTCGGGGTGAGGGGAAAACAGGCTCCAGCCTTGCCTGGCTCAGACAACTCCAGATGGGGCC
 AACTTAGAATTGAAAGAGCTCGGTACAGGGAGGTGAAGGAGACAGACCTCCTTGCTCAGAAAGCCAGCTGGCCTTG
 TAAGTTGAAGGTGACAAGATAAGGCCCTCGAAGGCTGAGTGGAAGAGAAAAGGGAGTTTGTCTTCTAAGACAGAACTA
 TCTCCGACTTCTTACTCATTTCTTCCCAGTAGTGAAAGTAGAAAGAAGGCTGGCAGAGCTGGGCCCAGGCAGAGCACA
 GCCTGGGAGATTCTTGCTGCCTGGCTGTGTGGCCTGCCTAGCTCTCTTGCTCATTCTCCAAGGCCCGATCTGGATTGACT
 CGGAAGCACTGGAGTTGAGGAGGAGGCACCTGAGGCTTTCTTTGGGAGGGAGAGGAGTTTGGTTTCTGGCAGGCCATG
 ATCAACCATCAGGATCCATTTCTTGAAGTCTGATCTCCCCTTTTGAGTACCATTTCCAGGATCATCCCGGAAGTGGCAC
 CTACCCCTCAGGGAAACGTTACCCCTAGATTTGGTTTCAGCAACCTAGTAACTAGTTGTCTGAGTTGTGATTTCTTAC
 TTTTAAACGCCCACTGTCTGTGTAGCTTTGTCCGCAGCAGAGAGGGTGGGTATTTCTTTATTTTCTTAGAGAGGGTGA
 ATCAAGGTTTCAAGTGAAGTCACTTCAGAGCTTGGCCCATGGTCAGAACTAGAGAGACAACTTGTATTTTCGACACAG
 TTCCCTACACCCCTCCCTGCAGGGCTCTGGCCTCCAGAGTAGCAGTAGGAACCGGAGCTTCTTGCTGCTTTCTTAGTTTAT
 GAGGAAGAAGATTGAGGGCTTGAGGGCAGCTTGTATCTCCCGGTGACAAGTGTGTCAGAGGGACGTGTGTAGACA
 CGTGTCTATAACATGTGTGTGATGTGGGTCTATCTTGAACCTTCTAAGGTTCTCCGTGCATATCCCTGCTGTGTGCCCG
 GTTCTGCTGCTCTGTATACCCGTTCTTCCAAGAGCGAGCTTCTTCAAGCCTCGGACCGGACAGAGTCAGTCCCTTCTAGA
 AACTCGGCCTGTTCCCTCACAAGGAGAAGCACAGACAGTGTCTTGGCTGGCCAGGATGGACGGCACAGGGCAGAGCTC

AGCTGCGAGTCTGTAGAGTCAATGTGTCTGAGGAACAGAGAGAGCTGGGTTTGAAGAAGGATGCCTCCTTCTCTGCGACGACCG
AGGGTGTGCGAGTGTCTGTGAATGTCCTGAACAAGCAGAAAAGGGGCGCCTTTGCTGTTTCGTGGTCCGCCAGAAGGAGG
CTGTTGTGTCTTCCAGGTGCCCTAATCCTTCGAGGACTGTGAGTAAGACCTGGGGATGTAGGGAGGGGCATCCTTGC
CAGGTTTTTCAGGGACCCTCACCCGGGGAACCTTTTTGTTTTTCTCCCTTCTCCCTGAGCCCAGTGGCAGGAGGGTAACCT
TGTCAGCCCAGGGAATGGGAAATGTAGGGACCTGATAGGAAGAACTCAGGCTGGTTGGGACTAGTCACACTCTGTCTT
GGACCATAGATATCAGCGGAAGTACCTCTACCAAAAAGTGGAACGAACCTCTGTGTGACCCCCCACCAAGAATGAGTC
TGAGATCCAGTTTTTCTATGTGGACGTGTCTACCCTGTCACCCGTCAATACCACTTACCAGCTCCGAGTCAACCGTGTGG
ACAATTTTGTGCTCAGGTATTGAGGGTAAGAGAGAGGGGACCTCACAGCCTCTGCCTTCTTCCCAAGTGCTGAGCGTAA
TTGTAGGGTTCCTCTCTTCCCTGTAGGACTGGAGAGCTGTTTACTTTTAATACCACTGCAGCCCAGCCCCAGGTA AAAATC
CCTTATCAAAAATGGGGTCCCTCAGCCTGACGTGGTCACACATGCCTTTGATCCTAGCATTTGGGAGTCAGGTGGGTTTCT
TGAGTTCAAAGCCAGCTTAGTCTACATAGTGAGTTCTAAGTCACCAAGGTTACACAGAGAAAACCTTGTCTCAAGATAGC
AACAACAACAAAAAGAAAATTGGGGAGATTTGGATATGAGAGCAGGAGTAGGTACAGAATTGCTAGGACTAGCAATT
AATTTTGTCTCTAGGGTGGGACTCTCGGAGCTCCTGTGTGGATAGACAGGCAGGGACAGTACAGTGACAGGGTCTGCTC
ACTGACTTTCCTACTCTGCCTCTCAGGCACAATCCTATGTGCCCAGCTGACACGAAGGATATCAGTGCTCAGGGACATG
CAGGACTGGGATGTTACAGGTCAAGGCTCTTCTCCCTCGTAGCTTCATTGTCTGAGCCCAAGAAGATTCTGAAACCTCC
CTTTTGAGGAGACAGGTCCCTTCGGAGGGGCAGAGAGAGACCCCTCCTGAGATGACACTCTCCCTTCTATGTTCTCAG
TACTTCAAATACGAGTTTCTGATGGTGTGGACTCGGTAATTGTCAAGGTGACCTCCAAGAAGGCCTTCCCTGCTCAG
TCATCTCCATCCARGATGTCTGGTAAGCTGGCTATCATTTTACCCTCCACCAGAAAGTACTTGGGACATTAGCAGAGG
GGACAGGGCCCAATTCCCCATCCATCTGCCTCTTCCCTCCTTCCCTCCRCAGTGCCCTGTCTATGATCTGGACAACAATGT
AGCCTTCATTGGCATGTACCAGACGATGACTAAGAAGGCAGCCATCACTGTGCAGGTAGGAAATGCATGTGCCCTTCTG
AGGGATGGACGGGGCTGGCTGTTGAAGTAGATGCCTCTCCACACCCTGTCCTTGTCCCCATTCTGCCTTAAGATTCTTA
AACTTTTTCACTTGACCTTGTGCTGCCTGAGAACTTTTTCTCCGCTGAACCATGTCACTAGCTCTTAATTTTTTTTTTTTT
AAATCGGCAAAGCAAAGGATTTTACTCAGATATAACGTGGAGGCACCAGCCAGATATGCTACAAGAGAGCAGCAGAG
ATTTACTTCGAAACCATATTTTTGTTTTATAATGATCAGTGTTGAGGGTGCCACTTTGCATCAACGTATGGTACCATGTG
GCAGAAACACTTTTAGGGCCATTTTAGAACTGTTGAGTTCTCTCTTCAGCAACACAGACACTGAAGTTGGAATGGTAT
AGACTATTAGTGTGCCCCCTGTGTAGAGATGGCGTGCAAATTTGTGAGGCGTTCTATATATTTTTTTTTTATTACAAGGA
TATGCTTTTTTTTTTAAAAAGATTTATTTATTTATTATATGTAAGTACACTGTAGCTGTCCTCAGATACTCCAGAAGAGGG
CATCAGATTTTCGTTACGGATGGTTGTGAGCCACCATGTGGTTGCTGGGATTTGAACTCGGGACCTTTGGAAGAGCAGTC
GACACTCTTAACCACTGAGCCATCTCGCCAGGCCCTATATTTTTAAAAAAGATAATTGTTAAAAATCTTGTCGTAATCC
CAAATCAAATCTCATGGAGTCCTTTGGGAATTCAGAACAAATTATTTAAACCACACATCCTTACCTAGCACAAATGCAGGA
AGACCAAGGTGCATTGATTTTATCCCCACGTGCTTGAGGTGAGGCGGTGCGAAAACACAAAGACTTTTTTTTCCATTAC
TGAAGGTTTCTGTGAGAGCAGAAAACCTTGGGGTGTGCAGTAAACACCCCGCATTTTCAGCGTGTGCAGTACTCTAGCACC
CAAGCTGAGTTTCAGACAGTGTTCCCTTGGCGTCTGTGTGCTCTGATGGCGTACATGGTACAAAGAGCACGTGTGTGTTCA
GAATCAGGGCTGAGGTGACACCACCTGATAACAGCATGGCTGAGTGCTTTTAGAAGCGCCTTGGATGCAGTGTGCGTTT
GATTTTGAATGATTTTCGGTTGTCTGTGCGTTCAGAAACATTTTACTGTTGCTTGATGTTTTACCACCCCCCGCATCCTGCT
CCTGTGTTCTCTGATATATGTGAGTAGGGCCATCTCTGGCTGTGTCGCCAGGACAAGCTGTGTGACCCGCATACGTTGCTC
ACTTGTTCCACGATTGTAGCATGGGTATGGGTTTGGTCCCTAACCCCTAACCTTCTCAGGGCTGTGTGACAAAGATAAT
GGCAGCTCCTCTCCTGTGGGTGCAGCTCAGTGGTAGAGACCTGCCTGGCAGTTGAGAGGCTGTGTATTAGATCGTCAG
CATCACAGAAGTGTGAGGCAAGAGATCTATGCAAGGACTGGGTAAAACCTATATCTAGAAAGAGGCTTGTAGCTTCTGG
TCCAAAGTTCATATTACAGAAAAAGACGGCAACAGTAATGTTCAACCAGCATCCTCCTCCTCTTCTCCTCCTCCTCCTCC
TCCTTTCCCTCCTGCAGCGGAAAGACTTCCCCAGCAACAGCTTCTATGTGGTGGTGGTAGTGAAGACTGAGGACCAGGC
CTGCGGAGGGTCTTGGCCTTCTACCCTTTTGTGGAAGGTATGTTTCATGTACTGGTTTGGGATGGATCAGGCTCAGTGG
CGTCCCAGGAGATAGAAAGGACCATGTGGCTGTTGGTGGATCCACTGGGACACGAGCCTGGCGTCTAGACTAGCCAA
GGCCTGGCTCCATCAGCCCTAGCTCAACTCCCAGCAATGACTTCTTTTCCACTTTGACATTTTACTTCCAGATGAGCCAG
TGGATCAAGGGCACCGTCAGAAAACACTGTCAGTGCTGGTCTCTCAGGCTGTCACATGTAAGTGTGGGCACCTGAGTGT
GATGGGAAAAGCTCCCTCAGGCTTCTCTCAGACCCAAGAAAAAGCAGCTGTTTTCAGAATGGGAGGAGTGGCGAGGA
CCCTCCTACCCAGCAGGAGCTGGGACACCGGCAAGCAGGCTTCCAACCAGAGAGATGCCAAAGGCGATCCCTGTGTAA
TATGGGACAGGGTCCATGGACAAACTGACGAGCAAAATCTCAGTGACACCCTGCCTCTTAGCAGAGGAATCTGTGCCC
TGTCTCTGTGACAGAAGTAGTAAGATCTATCCCACTGGATACATTTCGGTTGTGAGGCTTAGCCCAGAGTTAGAGTATTG
GGCCCCTAGTCAGTGCTGAGCAATGCCTATTAACCTTTTTTCACTGGAGTCCCTTTCTAAACTGGACTCTAAGGAGCCGGGC
ATGGTGGTGTACCTCTTTAATCCCAGCGTTGGGAGGTAAAGACAAGATCATAGCCCAGACTCACCTTCTTATATCA
TGAGGTCAAAGCCAATTTGAATATGAGACGTTGTCTCCAAAAAATGTAACAGTAAAAAGTAACCAGGCTGGAGAAAT
GGCTCAGCTGTTAAGAACACTGGGTGATTTTCCAGAGGATCCAGGTATTATTCCACAGCACCCACGTGGCAGCTCACAA
GGCACCTGGAACCTCTGGTTCCAAGGGATCTGATCCTTTGCCTTCCACAGGCTCCTGTGGGCGATACACATACATACATA
CATACATACATACATACATACATACATACATACATACATACATACATACATACATACATACATACATACATACATACAT
TGCATCTTTTTTTTTTTTTTTTTTTTTTGGTTTTACGAGACAGGTTTTCTCTGTGTAGCCTTGGCTGTCTGGGACTCGCTCTG
TAGACCAGGCTGGCTTTGAACCTCAGAAATCAGCTGCTTCTGCCTCCCAAGTGTGGGTTTAAAGGTGTGCGCCACCAC
GCCCCGCTAAATAAATGCATCTTAAACATGTGATTATAAGCCCAACTCACACTAAGTCAATTAATTAGTTAAAAACAAA
AGAGCCAAATTAGGGCTTGTGCTAGAAAGGGGACTCAGTACTCACTGAGCCCTGGTGTGTGCTAGCAGTGCAGCTCTTA

[illegible]

GCCCTGCCCTGATGGGTTCTGCTCTGCCCTGCCCTGCCCTGATGGGCTCTGCCTTGCCCACATCTCTCTTGCCCTCTCTGC
CTTCTGCTCTCCCATCTACTCTTGCTTTTCCCTGTGTGCCCTATCCCTGCTCAGCTGTTTATCCTGTCTTACCTTGTCTCTG
CCCTCTCTGCCCAGCCCTGCACAACTACCTGCTACCCACTCACCACACAGCGCAGTCCTCTTCCACACCCCTTGGGTG
TCCTCTTCCCACCTCACCTGCACGTCTCTTCTTCTTCTTCTCCCCACAGGAGTGTGGGATCCCCAAACACTTTGGTCTGT
TTTACGCCATGGGCACAGCACTGATGATGGAGGGGCTACTTAGTGCCTGTTACCACGTCTGCCCCAACTACACCAACTT
CCAGTTTGGTGAGTGTCTGCTCCTGTCTGGCTGAATCTGCTGTCCCAGGTCACCAGCTGCTAGGGGGCTCTGAGGCTGG
CCTCTGAGTGCAGCTTCCATTCTAGAAGATGGCTACCTGTGCTGCCTCTTCCCAGTCATCCCACAGAACTCTAAGAAT
CTCAGGAAGTGCTCCCTAACTTCTGCGTATTCATATACTGAGACCCTCAAACCTAAGATGTCCTTGACTTGAGGGAACAA
CAGACTAGCAAGTGGTAGGATTACAGGGGCAGCTAAGGGGCTAAAGCTGAAGCAGTGACCCTTCAGCTTGCTGATGGCA
CTCCAGAGGTCTTGATTGTCTGGGCTGGGAGTTGTGTGTGGGGTCCCTGTGGTATCTGCAGCTCACAGCCTGTTCTCTCC
CAGATACCTCCTTCATGTACATGATTGTGCGCTCTGCATGCTGAAGCTCTACCAGAAGCGGCACCCAGATATCAACGC
CAGTGCCTACAGTGCATATGCCTGCTTGCCATCGTCATCTTCTTCCGTTCTGGGCGTGGTGAGGGCCTGGTCTACTC
TGTACACCCCGTAGGAAGGGCACGTCCCTCCCCCTAACACCCACCCACCCCGTGAAGTGTGATTTCATCTGGG
CTTCCACTGCAGGAGAGATCCTACTGCTTCCCTAAGGGGCCATTCTGGGCCCTCTGTAATCGAAGCCTAACCCAGCAG
CTTGCTAGTAGGGGTGCAGACACAGGACACGGGAGCAGGTACCGTCTGCGCCCTCACTCGTGTGGGCTTGCCAC
AGGTGTTTGCAAAGGGAACACGGCCTTCTGGATTGTCTTCTCCGTCATTCACATCATCT

Selection Cassette:

GGATCCCGGGCCGCTCTAGCTAGACTAGTCTAGCTAGAGGAATTCCGCCCCCTCTCCCTCCCCCCCCCTAACGTTACTG
GCCGAAGCCGCTTGGAATAAGGCCGGTGTGCGTTTGTCTATATGTTATTTTCCACCATATTGCCGTCTTTTGGAATGTG
AGGGCCCGGAAACCTGGCCCTGTCTTCTTGACGAGCATTCTAGGGGTCTTTCCTCTCGCCAAAGGAATGCAAGGTC
TGTTGAATGTCGTGAAGGAAGCAGTTCCTCTGGAAGCTTCTTGAAGACAAACAACGTCTGTAGCGACCTTTGCAGGCA
GCGGAACCCCCACCTGGCGACAGGTGCCTCTGCGGCCAAAAGCCACGTGTATAAGATACACCTGCAAAGGCGGCACA
ACCCAGTGCCACGTTGTGAGTTGGATAGTTGTGGAAGAGTCAAATGGCTCTCCTCAAGCGTATTCAACAAGGGGCTG
AAGGATGCCCAGAAGGTACCCATTGTATGGGATCTGATCTGGGGCCTCGGTGCACATGCTTTACATGTGTTTAGTCGA
GGTAAAAAAACGTCTAGGCCCCCCGAACCACGGGGACGTGGTTTTCTTTGAAAAACACGATGATAAGCTTGCCACA
ACCATGGAAGATCCCGTCGTTTTACAACGTCGTGACTGGGAAAACCTGGCGTTACCCAACCTTAATCGCCTTGCAGCAC
ATCCCCCTTTCGCCAGCTGGCGTAATAGCGAAGAGGGCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGG
CGAATGGCGCTTTCGCTGGTTTCCGGCACCAAGAAGCGGTGCCGGAAGGCTGGCTGGAGTGCGATCTTCTGAGGCCGAT
ACTGTCGTGCTCCCTCAAACCTGGCAGATGCACGGTTACGATGCGCCCATCTACACCAACGTAACCTATCCATTACGG
TCAATCCGCCGTTTGTTCACGGAATCCGACGGGTTGTTACTCGCTCACATTTAATGTTGATGAAAGCTGGCTACA
GGAAGGCCAGACGCGAATTATTTTGTATGGCGTTAACTCGGCGTTTCATCTGTGGTGCAACGGGCGCTGGGTGCGTTAC
GGCCAGGACAGTCGTTTGCCGTCTGAATTTGACCTGAGCGCATTTTTACGCGCCGAGAAAAACGCGCTCGCGGTGATGG
TGCTGCGCTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGGCATTTTCCGTGACGTCTCGTT
GCTGCATAAACCGACTACACAAATCAGCGATTTCCATGTTGCCACTCGCTTAATGATGATTTACGCCGCGCTGTACTG
GAGGCTGAAGTTCAGATGTGCGGCGAGTTGCGTGACTACCTACGGGTAAACAGTTTCTTTATGGCAGGGTGAAACGCAG
GTCGCCAGCGGCACCGCGCCTTTCGGCGGTGAAATTATCGATGAGCGTGTTGGTTATGCCGATCGCGTCACACTACGTC
TGAACGTCGAAAACCCGAACTGTGGAGCGCCGAAATCCCGAATCTCTATCGTGCGGTGGTTGAACTGCACACCGCCG
ACGGCAAGCGTGATTGAAGCAGAAGCCTGCGATGTCGGTTTCCGCGAGGTGCGGATTGAAAATGGTCTGCTGCTGTA
ACGGCAAGCGTTGCTGATTTCGAGCGTTAAACCGTACAGGACATCCTCTGCATGGTCAGGTGATGGATGAGCAGAC
GATGGTGCAGGATATCCTGCTGATGAAGCAGAACAACTTAAACGCCGTGCGCTGTTTCGATTATCCGAACCATCCGCTG
TGGTACACGCTGTGCGACCGCTACGGCCTGTATGTGGTGGATGAAGCCAATATTGAAACCCACGGCATGGTGCCAATG
AATCGTCTGACCGATGATCCGCGCTGGCTACCGGCGATGAGCGAACGCGTAACGCGAATGGTGCAGCGCGATCGTAAT
CACCCGAGTGTGATCATCTGGTCGCTGGGGAATGAATCAGGCCACGGCGCTAATCAGACGCGCTGTATCGCTGGATC
AAATCTGTGATCCTTCCCGCCCGGTGCAGTATGAAGCGGCGGAGCCGACACCACGGCCACCGATATTATTTGCCCGA
TGTACGCGCGCGTGATGAAGACCAGCCCTTCCCGCTGTGCCGAAATGGTCCATCAAAAAATGGCTTTCGCTACCTGG
AGAGACGCGCCCGCTGATCCTTTGCGAATACGCCACGCGATGGGTAACAGTCTTGGCGGTTTCGCTAAATACTGGCAG
GCGTTTCGTAGTATCCCGTTCACAGGGCGGCTTCGTCTGGGACTGGGTGGATCAGTCGCTGATTAAATATGATGAAA
ACGGCAACCCGTGGTCGGCTTACGGCGGTGATTTTGGCGATACGCCGAACGATCGCCAGTTCTGTATGAACGGTCTGGT
CTTTGCCGACCGCACGCGCATCCAGCGCTGACGGAAGCAAAACACCAGCAGCAGTTTTTCCAGTTCCGTTTATCCGGG
CAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAACGAGCTCCTGCACTGGATGGTGGCGCTGGAT
GGTAAGCCGCTGGCAAGCGGTGAAGTGCCTCTGGATGTCGCTCCACAAGGTAAACAGTTGATTGAACTGCCTGAACTA
CCGACGCCGAGAGCGCCGGGCAACTCTGGCTCACAGTACGCGTAGTGCAACCGAACGCGACCGCATGGTCAGAAGCC
GGGCACATCAGCGCCTGGCAGCAGTGGCGTCTGGCGGAAAACCTCAGTGTGACGCTCCCCGCCGCGTCCCACGCCATC
CCGCATCTGACCACCAGCGAAATGGATTTTTGCATCGAGCTGGGTAATAAGCGTTGGCAATTTAACCGCCAGTCAGGCT
TTCTTTTACAGATGTGGATTGGCGATAAAAAACAACCTGCTGACGCCGCTGCGCGATCAGTTCACCCGTGCACCGCTGGA
TAACGACATTGGCGTAAGTGAAGCGACCCGCATTGACCTAACGCTGGGTGCAACGCTGGAAGGCGGCGGGCCATTA
CCAGGCCGAAGCAGCGTTGTTGCAGTGCACGGCAGATACACTTGCTGATGCGGTGCTGATTACGACCGCTCACGCGTG

Targeted Locus:

TATATATATATATATATATATATATATATATTTACATGTTGCCAGGTGTCTGTGGAAGTCAGAGAACAAATTTGTGGA

GTTAGTTCTCTCCTCCCTGGTGCAGAGCTCAGGCCGGCCTTTCCATGGCAAGTGCCTCTTCCTGATAAGCTACCTCAGCT
CGGTTCTTGTGTATATTTTCCTATTTATGTCTGAAGTTTGGATTATATACCACTTATATAATGTTATTGAATTCCTCCTT
AGATGTCCCTTTGATGGTATTAAGAATCTATCTGCTTAACCTCATAGTAGTATCTCTGACCACCTCTTCCTTCACTGTGA
ACAAGCAGTTTTCCTTTGAGCTTTCTCAAGATCACAGGGATGCAAATTGCTGTCCCCATATTTTATTTGTATTTCTTATTTCG
TAGGACACAGTCCCTGGAGTGGAATGACTGGGTTGAAGGGTATAGAGCTCTTTTAAGCCTAAGTTCTCAGAAAGGTTT
TTGCCAGTTGACAACGAAAGGTCAGAAATCTTTCCGTGGGCTTTGTTCAAACAAACAAAGCAGTTTCTGCAGAGTAGGGA
CAGAGCTCACAGGTTGGAAGGCATCCTGGTTATGGTGCCTTGGTTCTGGTTATCCCTCTACTGTGAGAGGGGAGTGGC
CGCTGAGCTGCTCTCAGTGGGCAGGCGCTTTTATGAGCCAATGAGGGAAAAAGAATGATGCTGGGGTAATGATTTTGG
AGCACAATTCTGTCTTGAGCAAAGAAATCATCTGTGACGAAGACCCTGCACTTACTGGGCTCTGTGAATCTTGCCAGC
AATGCCAACCCAGCAGTAGAGTGGGAGGAGGATCAGGCGTTCAAGACTCTCCAAACTTACACGACCAGTTCCAGA
CCAGCCTGAGTTATGTGAGCCGTCTCAAAAAGCCAAAAAACGCAGACCACAAAAGCAAGAATCCAATACTTAGTGAT
CCTTCGTGAAAAACCCAACTCCAGACGCTCACAGGACAACGAAGGAAGGAGGCGGCGACGGCTGCGTGGGAAGTAGA
GGCAGCCTGGCCCTTTAAATCCGCGTCGGTTTCCCATGACGTAAGCGGGCGGGCACAGCCGCTGTTTACCGCGGCGCA
GCTCCTGGTAGCTCCGAGTTCTGCGCCGCGTCCGCCGCCCTTAAAGGGCCCGCGTCCGGGAAGCCTTCGGGCCAGGGCC
ACCGCCGCTCGGCTCTCCGGGCGCGAGCGGACGCCGGGTCTCCAGCCGGGCTGGGCCGGGCTGGGGTGWCGGGTTCGC
GGTGCCGCCCTCGCGAGCCGGGATCCGCGCGAGGCCCAGGAGCGGCTCCAGGGAGGGGACGCGTCTATCTGAGGCCG
GGGTAAAGTTCTGGTCCCGGTGAGATGCTGGAAGCTGCTGCGGCAGCCGCAACGCTCTAGAGGCCATAGCGGCCATT
TAAATGGCGCGCCGGATCCCGGGCCGCTCTAGCTAGACTAGTCTAGCTAGAGAATTCGCCCCCCCCCCCCCCCCCTC
TCCCTCCCCCCCCCTAACGTTACTGGCCGAAGCCGCTTGAATAAGGCCGGTGTGCGTTTGTCTATATGTTATTTTCCA
CCATATTGCCGTCTTTTGGCAATGTGAGGGCCCGGAAACCTGGCCCTGTCTTCTTGACGAGCATTCTAGGGGTCTTTCC
CCTCTCGCCAAAGGAATGCAAGGTCTGTTGAATGTCGTGAAGGAAGCAGTTCTCTGGAAGCTTCTTGAAGACAAACA
ACGTCTGTAGCGACCCTTTGCAGGCAGCGGAACCCCCACCTGGCGACAGGTGCCTCTGCGGCCAAAAGCCACGTGTA
TAAGATACACCTGCAAAGGCGGCACAACCCCACTGCCACGTTGTGAGTTGGATAGTTGTGGAAGAGTCAAATGGCTC
TCCTCAAGCGTATTCAACAAGGGGCTGAAGGATGCCCAGAAGGTACCCCATTTGTATGGGATCTGATCTGGGGCCTCGGT
GCACATGCTTTACATGTGTTTAGTCGAGGTTAAAAAACGTCTAGGCCCCCCGAACCACGGGGACGTGGTTTTCTTTG
AAAAACACGATGATAAGCTTGCCACAACCATGGAAGATCCCGTCGTTTTACAACGTCGTGACTGGGAAAACCTGGCG
TTACCCAACTTAATCGCCTTGACGACATCCCCCTTTCCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCC
TTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGCTTTGCCCTGGTTTCCGGCACCAGAAGCGGTGCCGGAAAGCTG
GCTGGAGTGCGATCTTCTGAGGCCGATACTGTGCTCGTCCCTCAAACCTGGCAGATGCACGGTTACGATGCGCCCATC
TACACCAACGTGACCTATCCCATACGGTCAATCCGCCGTTTGTTCACGGAGAATCCGACGGGTGTTACTCGCTCA
CATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGCGAATTATTTTTGATGGCGTTAACTCGGCGTTTCATCT
GTGGTGCAACGGGCGCTGGGTGCGTTACGGCCAGGACAGTCGTTTGCCGTCTGAATTTGACCTGAGCGCATTTTTACGC
GCCGGAGAAAACCGCCTCGCGGTGATGGTGCTGCGCTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGG
ATGAGCGGCATTTTCCGTGACGTCTCGTTGCTGCATAAACCGACTACACAAATCAGCGATTTCCATGTTGCCACTCGCTT
TAATGATGATTTACGCCGCGCTGTACTGGAGGCTGAAGTTGAGATGTGCGGCGAGTTGCGTGACTACCTACGGGTAACA
GTTTCTTTATGGCAGGGTGAAACGCAGGTGCGCAGCGGCACCCGCCCTTTCCGGCGGTGAAATTATCGATGAGCGTGGTG
GTTATGCCGATCGCGTCACACTACGTCTGAACGTGAAAACCCGAAACTGTGGAGCGCCGAAATCCCGAATCTCTATCG
TGCGGTGGTTGAACTGCACACCGCCGACGGCACGCTGATTGAAGCAGAAGCCTGCGATGTGCGTTTCCGCGAGGTGCG
GATTGAAAATGGTCTGCTGCTGCTGAACGGCAAGCCGTTGCTGATTGAGGCGTTAACCGTCACGAGCATCATCCTCTG
CATGGTCAGGTCATGGATGAGCAGACGATGGTGCAGGATATCCTGCTGATGAAGCAGAACAACTTTAAACGCCGTGCGC
TGTTGCAATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTACGGCCTGTATGTGGTGGATGAAGCCAATA
TTGAAACCCACGGCATGGTGCCAATGAATCGTCTGACCGATGATCCGCGCTGGCTACCGGCGATGAGCGAACGCGTAA
CGGAATGGTGACGCGGATCGTAATCACCCGAGTGTGATCATCTGGTTCGCTGGGGAATGAATCAGGCCACGGCGCTA
ATCACGACGCGCTGTATCGCTGGATCAAATCTGTGATCCTTCCCGCCCGGTGCAGTATGAAGGCGGCGGAGCCGACA
CCACGGCCACCGATATTATTTGCCGATGTACGCGCGCGTGATGAAGACCAGCCCTTCCCGGCTGTGCCGAAATGGTC
CATCAAAAAATGGCTTTTCGCTACCTGGAGAGACGCGCCCGCTGATCCTTTGCGAATACGCCACGCGATGGGTAACAG
TCTTGCGGTTTTTCGCTAAATACTGGCAGGCGTTTTCGTCAGTATCCCCGTTTACAGGGCGGCTTCGTCTGGGACTGGGTG
GATCAGTCGCTGATTAAATATGATGAAAACGGCAACCCGTTGGTTCGGCTTACGGCGGTGATTTTGGCGATACGCCGAAC
GATCGCCAGTTCTGTATGAACGGTCTGGTCTTTGCCGACCGCACGCCGATCCAGCGCTGACGGAAGCAAAACACCAG
CAGCAGTTTTTCCAGTTCCGTTTATCCGGGCAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAACG
AGCTCCTGCACTGGATGGTGGCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAAGTGCTCTGGATGTGCTCCACAAG
GTAAACAGTTGATTGAACTGCCTGAACTACCGCAGCCGGAGAGCGCCGGGCAACTCTGGCTCACAGTACGCGTAGTGC
AACCGAACCGGACCGCATGGTCAGAAGCCGGGCACATCAGCGCCTGGCAGCAGTGGCGTCTGGCGGAAAACCTCAGT
GTGACGCTCCCCGCCGCTCCACGCCATCCCGCATCTGACCACCAGCGAAATGGATTTTTGCATCGAGCTGGGTAATA
AGCGTTGGCAATTTAACCGCCAGTCAGGCTTTCTTTTACAGATGTGGATTGGCGATAAAAAACAACCTGCTGACGCCGCT
GCGCGATCAGTTCACCCGTGCACCGCTGGATAACGACATTGGCGTAAGTGAAGCGACCCGCATTGACCCTAACGCCCTG
GGTCGAACGCTGGAAGGCGGCGGGCCATTACCAGGCCGAAGCAGCGTTGTTGCAGTGCACGGCAGATACACTTGCTGA
TGCGGTGCTGATTACGACCGCTCACGCGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGAAAACCTACCGGATT
GATGGTAGTGGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACACCGCATCCGGCGCGGATTGGCCTG

AACTGCCAGCTGGCGCAGGTAGCAGAGCGGGTAAACTGGCTCGGATTAGGGCCGCAAGAAAACCTATCCCGACCGCCTT
ACTGCCCGCTGTTTTGACCGCTGGGATCTGCCATTGTCAGACATGTATACCCCGTACGTCTTCCCGAGCGAAAACGGTC
TGCGCTGCGGGACGCGCGAATTGAATTATGGCCACACCCAGTGGCGCGGCGACTTCCAGTTCAACATCAGCCGCTACA
GTCAACAGCAACTGATGAAACCAGCCATCGCCATCTGCTGCACGCGGAAGAAGGCACATGGCTGAATATCGACGGTT
TCCATATGGGGATTGGTGGCGACGACTCCTGGAGCCCGTCAGTATCGGCGGAATTCCAGCTGAGCGCCGGTCGCTACC
ATTACCAGTTGGTCTGGTGTCAAAAATAATAAACCAGGGCAGGCCATGTCTGCCCGTATTTCCGCTAAGGAAATCCAT
TATGTACTATTTAAAAAACACAACTTTTGGATGTTGCGTTTATTCTTTTTCTTTTACTTTTTATCATGGGAGCCTACTT
CCCGTTTTTCCCGATTTGGCTACATGACATCAACCATATCAGCAAAAGTGATACGGGTATTATTTTTGCCGCTATTTCTC
TGTTCTCGCTATTATTCCAACCGCTGTTTGGTCTGCTTTCTGACAACTCGGAACTTGTTTATTGCAGCTTATAATGGTTA
CAAATAAAGCAATAGCATCACAAATTTACAAATTTAATTAAGGCCGCGGGATCGATCCCGTCGAGCAGTGTGGTTTTTC
AAGAGGAAGCAAAAAGCCTCTCCACCCAGGCCTGGAATGTTTCCACCAATGTCTGAGCAAAACCCCGCCAGCGTCTTGTCAATTGGC
GAATTCGAACACGCAGATGCAGTCGGGGCGGCGCGGTCCAGGTCCACTTCGCATATTAAGGTGACGCGTGTGGCCTC
GAACACCGAGCGACCCCTGCAGCCAATATGGGATCGGCCATTGAACAAGATGGATTGCACGCAGGTTCTCCGGCCGCTT
GGGTGGAGAGGCTATTCGGCTATGACTGGGCACAACAGACAATCGGCTGCTCTGATGCCGCCGTGTTCCGGCTGTCAGC
GCAGGGGCGCCCGGTTCTTTTTGTCAAGACCGACCTGTCCGGTGCCCTGAATGAACTGCAGGACGAGGCAGCGCGGCT
ATCGTGGCTGGCCACGACGGGCGTTCCTTGCGCAGCTGTGCTCGACGTTGTCACTGAAGCGGGAAGGGACTGGCTGCTA
TTGGGCGAAGTGCCGGGGCAGGATCTCCTGTCTCATCTCACCTTGCTCCTGCCGAGAAAGTATCCATCATGGCTGATGCAA
TGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTCGACCACCAAGCGAAACATCGCATCGAGCGAGCACGTA
CTCGGATGGAAGCCGGTCTTGTGATCAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCGCCAGCCGAACCTGTTTCG
CCAGGCTCAAGGCGCGCATGCCGACGGCGAGGATCTCGTCTGTGACCCATGGCGATGCCTGCTTGCCGAATATCATGG
TGGAAAATGGCCGCTTTTCTGGATTTCATCGACTGTGGCCGGCTGGGTGTGGCGGACCGCTATCAGGACATAGCGTTGGC
TACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCTTCCTCGTGCTTTACGGTATCGCCGCTCCCGAT
TCGCAGCGCATCGCCTTCTATCGCCTTCTTGACGAGTCTTCTGAGGGGATCGGCAATAAAAAGACAGAATAAAACGCA
CGGGTGTTGGGTGCTTTGTTTCGGATCCGAATTCCTCGAGGGGCGCGCCATTTAAATGGCCAGCGAGGCCGGTACCCAATT
CGCCCTATAGCCCAGTGCCAGGAGGGTAACTTTGTGACCCAGGGAATGGGAAATGTAGGGACCTGATAGGAAGAACT
CAGGCTGGTTGGGACTAGTCACACTCTGTCTTGACCATAGGTATCAGCGGAAGTACCTCTACCAAAAAGTGGAAACGA
ACTCTGTGTCAGCCCCCACCAGAATGAGTCTGAGATCCAGTTTTTCTATGTGGACGTGTCTACCCTGTCACCCGTCAC
TACCACTTACCAGCTCCGAGTCAACCGTGTGGACAATTTTGTGCTCAGGTATTGAGGGTAAGAGAGAGGGGACCTCAC
AGCCTCTGCCTTCTTCCCAAGTGCTGAGCGTAATTGTAGGGTTCCTCTCTTCCCTGTAGGACTGGAGAGCTGTTTACCTT
TAATACCACTGCAGCCCAGCCCCAGGTAAAATCCCTTATCAAAATGGGGTCCCTCAGCCTGACGTGGTCACACATGCCT
TTGATCCTAGCATTTGGGAGTCAGGTGGGTTTCTTGAGTTCAAAGCCAGCTTAGTCTACATAGTGAGTTCTAAGTCACC
AAGGTTACACAGAGAAACCTTGTCTCAAGATAGCAACAACAACAAAAAGAAAATTGGGGAGATTTGGATATGAGAGC
AGGAGTAGGTACAGAATTGCTAGGACTAGCAATTAATTTTGTCTCTAGGGTGGGACTCTCGGAGCTCCTGTGTGGATAG
ACAGGCAGGGACAGTACAGTGACAGGGTCTGCTCACTGACTTTTCTACTCTGCCTCTCAGGCACAATCCTATGTGCCCA
GCTGACACGAAGGATACAGTGCTCAGGGACATGCAGGACTGGGATGTTACGGTCAAGGCTCTTCTCCCCTCGTAGCT
TCATTGTCTGAGCCAAGAAGATTCTGAAACCTCCCTTTTGAGGAGACAGGTCCCTTCGGAGGGGCAGAGAGACACCC
TCCTGAGATGACACTCTCCCTTCCTATGTTCTCAGTACTTCAAATACGAGTTTCTCTGATGGTGTGGACTCGGTAATTGTC
AAGGTGACCTCCAAGAAGGCCTTCCCCTGCTCAGTCATCTCCATCCAAGATGTCTGTAAGCTGGCTATCATTTTTACC
CTCCACCAGAAAGTACTTGGGACATTAGCAGAGGGGACAGGGCCCAATTCCCCATCCATCTGCCTCTTCCCTTCCTTCCT
CCACAGTGCCCTGTCTATGATCTGGACAACAATGTAGCCTTCATTGGCATGTACCAGACGATGACTAAGAAGGCAGCCA
TCACTGTGCAGGTAGGAAATGCATGTGCCCTTCTGAGGGATGGACGGGGCTGGCTGTTGAAGTAGATGCCTCTCCACAC
CCTGTCTTGTCCCCATTCTGCTTAAGATTCTTAACTTTTTCACTTGACCTTGTGCTGCCTGAGAACTTTTTCTCCGC
TGAACCATGTCACTAGCTCTTAATTTTTTTTTTTTTTAAATCGGCAAAGCAAAGGATTTTACTCAGATATAACGTGGAGGC
ACCAGCCAGATATGCTACAAGAGAGCAGCAGAGATTTACTTCGAAACCATATTTTTGTTTTATAATGATCAGTGTTGAG
GGTGCCACTTTGCATCAACGTATGGTACCATGTGGCAGAAACACTTTTAGGGCCATTTTAGAACTGTTGAGTCTCTCT
TCAGCAACACAGACACTGAAGTTGGAATGGTATAGACTATTAGTGTGGCCCCCTGTGTAGAGATGGCGTGCAAATTTGT
GAGGCGTTCTATATATTTTTTTTTTATTACAAGGATATGCTTTTTTTTTTAAAAAGATTTATTTATTTATTATATGTAAGTAC
ACTGTAGCTGTCTCAGATACTCCAGAAGAGGGCATCAGATTTTCGTTACGGATGGTGTGAGCCACCATGTGGTTGCTG
GGATTTGAACTCGGGACCTTTGGAAGAGCAGTCGACACTCTTAACCACTGAGCCATCTCGCCAGGCCCTATATTTTTA
AAAAAGATAATTGTTAAAAATCTTGTGCTAATCCCAAATCAAATCTCATGGAGTCCTTTGGGAATTCAGAACAAATTATT
TAAACCACACATCCTTACCTAGCACAAATGCAGGAAGACCAAGGTGCATTGATTTTATCCCCACGTGCTTGAGGTCAGGC
GGTCGGAACACAAAGACTTTTTTTCCCATTAAGGTTTCTGTGAGAGCAGAAAACCTTGGGGTGTGCAGTAAACA
CCCCGATTTACGCGTGTGCAGTACTCTAGCACCCAAGCTGAGTTTCAGACAGTGTTCCTTGGCGTCGTGTGCTCTGATG
GCGTACATGGTACAAAGAGCACGTGTGTGTTTCAAGATCAGGGCTGAGGTGACACCACCTGATAACAGCATGGCTGAGT
GCTTTTAGAAGCGCCTTGGATGCAGTGTGCGTTTGATTTTGAATGATTTTCGGTTGTCGTGCGTTCAGAAACATTTTACT
GTTGCTTGATGTTTTACCACCCCCGCATCCTGCTCCTGTGTTCTCTGGTATATGTGAGTAGGGCCATCTCTGGCTGGTG
CCCAGGACAAGCTGTGTGCACCGCATACGTGCTCACTTGTTCAACAGATTGTAGCATGGGTATGGGTTTGGTCCCTAAC
CCTAACTTCTCAAGGCCTGTGTGACAAAGATAATGGCAGCTCCTCTCTGTGGGTGCAGCTCAGTGGTAGAGCACCTGC

CTGGCAGTTGAGAGGCTGTGTATTAGATCGTCAGCATCACAGAAGTGTGAGGCAAGAGATCTATGCAAGGACTGGGTA
AAACTATATCTAGAAAGAGGCTTGTAGCTTCTGTTCCAAAGTTCATATTCAGAAAAAGACGGCAACAGTGAATGTTTAC
CAGCATCCTCCTCCTCTTCCTCCTCCTCCTCCTCCTCCTTTCCCTCCTGCAGCGGAAAGACTTCCCCAGCAACAGCTTCTA
TGTGGTGGTGGTAGTGAAGACTGAGGACCAGGCCTGCGGAGGGTCCTTGCCCTTCTACCCTTTTGTGGAAGGTATGTTT
CATGTACTGGTTTGGGATGGATCAGGCTCAGTGGCGTCCCAGGAGATAGAAAGGACCATGTGGCTGTTGGTGGATCCA
CTGGGACACGAGCCTGGCGTCCTAGACTAGCCAAGGCCTGGCTCCATCAGCCCTAGCTCAACTCCCAGCAATGACTTCT
TTTCCACTTTGACATTTTACTTCCAGATGAGCCAGTGGATCAAGGGCACCGTCAGAAAACACTGTCAGTGCTGGTCTCT
CAGGCTGTCACATGTAAGTGTGGGCACCTGAGTGTGATGGGAAAAGCTCCCTCAGGCTTCCTCTCAGACCCAAGAAAA
AGCAGCTGTTTTCAGAATGGGAGGAGTGGCGAGGACCCTCCTACCCAGCAGGAGCTGGGACACCGGCAAGCAGGCTTC
CAACCAGAGAGATGCCAAAGGCGATCCCTGTGTAATATGGGACAGGGTCCATGGACAAACTGACGAGCAA