



Lexicon Genetics Incorporated – Genentech Project Materials

Genentech ID:	UNQ299	Date of Submission:	11/17/04
Lexicon Contract Name:	DNA341	Mutation Type:	☒ Standard Knock out
LexVision Name:	SEC537N1		☐ Conditional
Reference accessions:	AK122504, NM_133913, ENSMUST00000047755	Is this gene X-linked?	No

Required Materials: ☐ pKOS clone DNA(s) pKOS-70
☐ Target Vector DNA 70-TV
☐ Targeted ES Cell DNA 1E5
☐ Genomic Map

Southern Blot Analysis: *External/Internal Probe Strategies*

	<u>5' External</u>	<u>3' External</u>
Name of Probe:	16+17	9+10
Restriction Enzyme for Genomic Digest:	XhoI	SacI
Predicted Wild-type Band (kb):	9.8 kb	8.4 kb
Predicted Mutant Band (kb):	8.7 kb	9.4 kb
Probe Size:	143 bp	206 bp

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:	18	5' Primer Name:	Neo3A
3' Primer Name:	19	3' Primer Name:	4
Predicted Wild-type Band (bp):	156	Predicted Wild-type Band (bp):	none
Predicted mutant band (bp)	none	Predicted mutant band (bp)	329 bp

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**

9 5' – GTGGAGAAAGCAGGGAGG
 10 5' – CACACACACCAGTGACCTC
 16 5' – GGGGCACTTGCTAACTAC
 17 5' – CCAGTTCTTGCTGAGCTG

PCR Genotyping

4 5' – GGTTGATGACTTCAGGCAC
 Neo3A 5' – **GCAGCGCATCGCCTTCTATC**
 18 5' – CTGAGTAGAGCCTGTCTCCA
 19 5' – GTGTACCAGCCTAGCACATAC

Genomic Sequence Deleted:

GCTCCCTGCTGGCTCTGCTGCGGCCAGTGCTCCCCCTCATCCTAGGACTGTCTCTGGGATGCAGCCTGAGCCTCCTGCGG
GTTTCTGGATCCAGGGTGAGGGAGAAGATCCCTGTGTAGAGGCTGTGGGGAAGCCAGGAGGGCCACAGAATCCAGAC
TCAAAAAATGGGCTGGACCAAGGCGATGAAGACTTCAGACCCAGGATTGTGCCTTACTACAGGGATCCTAACAAGCCC
TACAAGAAGGTGCTCAGGTGAGGGTGACTGTGCATAGTCCTCCAGCACTGACGCTCAGGTGAGGGTGACTGTGCATAG
TCCTCCAGCACTGATGCTCAGGTGAGGGTGACTGTGCATAGTCCTCCAGCACTGACGCTCAGGTGAGGGTGACTGCATA
GTCCTCAGCACTGATGCTCAGGTGAGGGTGACTGTGCATAGTCCTCCAGTACTGACGCTCAGTTGAGGGTGACTGCATA
GTCCTTAGCACTGACGCTCAGTTGAGGGTGACTGTCCATAGTCCTCCAGTACTGATGCTCAGGTGAGGGTGACTGTGCA
TAGTCCTCAGCACTGACGCTCAGGTGAAGGTGACTGTGCATAGTCCTCCAGTACTGACACTCAGTTGAGGGTGATTGTG
CATAGTCCTCAGCACCAGCCCTCACTCTAGAGCTGTTTGCTGCTGTGTTTATGTTGCTACTCAGTGTTAGTTTCTTGAA
GCACTTGTCTTATTTCTATCTTAGTTTGCTCCTATTTTATCCTTCCCCAAGTCTGAGAGTGTCTTACCCATTGGTGTTAA
TGTTCACTGTTCTTGAACAGAGCTGTACCTGCACCAACCTACTAAATAGATCTGAGTAGAGCCTGTCTCCACATAGCCA
AGTCCAGCCTCGTCCACTCAGTGGGCACTACCCCGGTAGCTAGTTATTAGTGATGAGGAGGGGGGTCTCTCCCTCT
CCCAATGCACCTCTTATTCTAGGAATGTATGTGCTAGGCTGGTACACGCTCCCTTAATGACTCAGGAGCTGACCCCTT
ATCTTCTGGTCTCTCCGTAGGACTCGGTATATACAGACAGAGCTGGGCTCTCGTGAGCGCCTGCTGGTGGCTGTCTGA
CTTCTCGAGCCACACTGTCCACCCTGGCCGTCGCGGTTAACCGTACAGTAGCACATCACTTCCCTCGGTTACTCTACTTC
ACAGGGCAGCGAGGGGGCCCGGGCTCCTGCAGGGATGCAGGTGGTGTCTCATGGAGATGAGCGGCCTGCCTGGCTCATG
TCAGAGACCCTGCGCCACCTTCACACACACTTTGGGGCAGACTATGACTGGTCTTCATCATGCAGGACGACACATATG
TGCAGGCCCCCAGATTGGCAGCTCTTGCTGGTCACTTAGCATCAACCAAGACCTGTACTTAGGCCATGCAGAGGAATT
CATTGGTACAGGAGAGCAGGCCCCGCTACTGCCATGGGGGCTTTGGCTACCTGTTGTCACGGAGTCTCCTATTGCGCTTG
CGGCCACATCTGGATGGCTGCCGAGGGGACATTCTCAGTGCCCGGCTGATGAATGGCTTGCCGCTGCCTCATCGACA
CTCTGGGCATCGGCTGTGTCTCACAGCACCAGGTGACAGCCCCTTCA

Genomic Locus: (the deleted sequence represents nt 6,576-8,204 in the sequence below)

GCCCCATATTTGTCTTTCTTTCTTTCTTTTTTTTTTTGTTTTTTTTGTTTTGTTTTGTTTTGTTTTTTTTGTTTTCAACACCTA
GTATTTTATTTCAGATAGCAGTCCTGTTACACATGGTCCAAGAACATTCAAATAAGAACTCAAATCAGAAGTTAAAGATT
GGTCTTCAAACATCATAGCCAACAATGCCACGTTTGCCTATGATCTCTCCGATATAAAACCACATCCACACCTCAGTGG
CCACCAAACCATTTCAGCACAGCTTCTTAAGTGAAGGTGTTTGAAGCTACCAGTTTTAGCACTTTGAATGATTTTTTTC
ACACTCTGAATAGCTGTAGGGATTTTCAGCAGGGGTTGGGGGAACCAGCTCAACCTTGGCGTAGTGCCAAAATGTGGCC
AATCGAGGCTTCGAGTAAGTCACGGCAGCGGCTACCATCGACGGTGCTTCTCCGCGAAGTTACGGATGAAGTTGGCC
ATGGTCTAAGGTGGAAGGTACGTCTCCCCGAACCACCGGCTGAATCCATATTTGTCTTTCTAAGTCTAGCTTATTTTGT
TAACATGATCTTCAGTTCCACCCATTTTCTTACAAACAATATAATCACATGCTTCTTTAAGACTAAATAATACTCCACTG
TGGAATATATTTCCATGTATTATATCCATTTTTGTCACTGCTGAGGCAAGTATCATTAGGCAGACTCCATGAATTGGCTA
CTGTGGATAATTCCAGCAAACCTCCATGTCTTTGCTTTTGTTCAGACAGTTTTGTTTGGGACAAAGGCAGAAAGCAGC
CACATTCTTCATTACCAAACATCAGAAGAACAGTCTCTAGCCACATAATATCCTCTTCTGAAACCTCTTGAGCGGC
CTCCTGCACAGTTCAAATCCCCCTCAGCACCCTGTCTTCTATGTTTTTACTAGAATGGCCCATTTAGCAGCACTTAAAT
CATTCAACTGCTTTTCTAATCCAAAGTTCCAAAGTCCACACTCCTTTAAACAAAAGTATGGTCAGGCCTATTAAAGCAA
TATTTTGGGCTGGTAAGATGGCTCAGCGGTTAAGAAAACCGACTGCTCTTCCAAAGGTCTGAGTTCAAATCCAGCAA
CCACATGGTGGCTCACAACCATCTGAAACGAAATCTGATGCTCTCTTCTGGAGTGTATAAAGACAGCTACGCTGTACTT
ACNN
NN
TTAGGACCTTCTGAAGAGCAGTTGGTGCTCTTACCACCTGAGCCATCTCTCCAGCCACAGCAACTCTTATAAAGAAAAG
CATTGAATTTTTTTCAGCATGCAGGCAGACATGGTGCCGGAGAGAGAGCTGAGAGTTCTACATGAGCCACTAGGTCTGA
TTGGAGTGTCTGAGACCTCAAAGCCAGCCCTAGTGACACACTCTAGTGTGACAGACCCTAGCCCTAGTGGCACAGC
CCCTAGTGACACACTTCTTCCAACAGAGCATACCCACTCCAACAAGCCTACACCTCCTAATAATGCCACTCCCTATGGA
GCTGGGGGGGGTCATTTTTATTCAAACCAGGACTCTAGATATGCAGCTCTTCTGTTATATGGTAACTTTGGGTCTTTTA
TACACATACCAGGAGTGGTATATTAAGATCTGCTTTCAGATTTTTGAGGGACTTCCATACTGAGTTCCCATCGGTTAGG
CTACATTTCTCCAACAATATGTAAATGGATAAGGAAGCAGGTAAGAGATTATAAGACAATTTTATTTGTTTATTTGTTTA
TTTATTTATGTATTTATGTATATATGTATTTATTTATTTATGTGAGTACATTGTTGCTGTCTTTAGACACACCAGAAGAGG
GCATCAGATCCCATTGCAGATGGTTTGTGAGCCACCATGTGGTTGCTGGGAATTGAACTCAGGACCTCTGGAAGAGCAG
TCAGTGCTCTTAACCACTGAGCCATCTCTCCGACCCCAAGATTTATTTTTTGAGAATTATAATTCATTATACAGTTTGTA
TCACAACATTTGATTTCCCTGCAAATTCTGAGGTGGTTGTTGTTACCATGTTACCATTCATTCTATCCACAAGCTCTGG
CTCAGGGCCYGTAAAAAAAACAAAAACAAAAACAAAAACAAAAACAAAAACAAAGCAGAAAAACCGCT
GCTGCTTAGAGGCAGCACAGGCATCAAGGCTGGGATTGTCTGGTTCTGTACCCTCAGGTCCATCAGGGACAATCACAGC
TGTGATAAGAAAACAATTGACAGGCAGAGTCTTCTTACCACAGTTAGCATCTTGGGGCACTTGCTAACTACTTGGGTA
TTTTGTCTTCTCACCCAGAGTTGAGATCTTGTGCATGGATAAGTGCTGGGAGCGAGAGGAGAGGAAATGAAGGCTAA
TAAGAAAGAGTTACAAAAGCCACAGCTCAGCAAGAACTGGTTATTGGTTCACATTTGTCTGGTTTCTTTGTCACTT

[illegible]

TCAGTGTTAGTTTCCTGGAAGCACTTGTCTTATTTCCCTATCTTAGTTTGCTCCTATTTTATCCTTCCCCAAGTCTGAGAGT
GTCTTACCCATTGGTGTAAATGTTCACTGTTCTTGAACAGAGCTGTACCTGCACCAACCTACTAAATAGATCTGAGTAGA
GCCTGTCTCCACATAGCCAAGTCCAGCCTCGTCCACTCAGTGGGCACTCACCCCGGTAGCTAGTTATTAGTGATGAGGG
AGGGGGGTCTCTCCCTCTCCCAATGCACTCCTTTATTCTAGGAATGTATGTGCTAGGCTGGTACACGCTCCCTTAATG
ACTCAGGAGCTGACCCCTTATCTTCTGGTCTCTCCGTAGGACTCGGTATATACAGACAGAGCTGGGCTCTCGTGAGCGC
CTGCTGGTGGCTGTCCTGACTTCTCGAGCCACACTGTCCACCCTGGCCGTCGCGGTAAACCGTACAGTAGCACATCACT
TCCCTCGTTACTCTACTTCACAGGGCAGCGAGGGGGCCCGGCTCCTGCAGGGATGCAGGTGGTGTCTCATGGAGATGA
GCGGCCTGCCTGGCTCATGTGAGAGACCCTGCGCCACCTTCACACACACTTTGGGGCAGACTATGACTGGTTCTTCATC
ATGCAGGACGACACATATGTGCAGGGCCCCAGATTGGCAGCTCTTGCTGGTCACCTTAGCATCAACCAAGACCTGTACT
TAGGCCATGCAGAGGAATTCATTGGTACAGGAGAGCAGGCCGGTACTGCCATGGGGGCTTTGGCTACCTGTTGTAC
GGAGTCTCTTATTGCGCTTGGCGCCACATCTGGATGGCTGCCAGGGGACATTCTCAGTGCCCGGCTGATGAATGGCT
TGGCCGCTGCCTCATCGACACTCTGGGCATCGGCTGTGTCTCACAGCACCAGGTGACAGCCCTTCAAGGCAGTCCCAG
TCCCCCAAAGGTTGGCAGTGACTGAATGATTGCTGTCCAACTGAATTCTCCAGACATCCTTTTGTCTTCCCAGAGGCC
AGCTAGCCCCCTCCGCTCTCCCTTGCTCACCTTACAGCCCTGGGGCCATCAAAAAGTGTGAAATTTTAGGGACCCCTGAA
CAAAACAGGAAGAGGTGCCTGAAGTCATCAACCTTCTGTCTGCCATCCTCCCCACCCCTTTTCCACACCCAGTGCAC
ATCACAATTAAGGACAAGGTGAAAATGTTCTAGAGTTCACCACCCTAGCCCTACCCCCACCCCAAGGTGGA
AAGCTCTATCATAGAAGGCTGATATCCCAGGGGCAAGACATCTTCCACACCTGCCTGCTGGGATGTCTACAGCTGTAT
TCTCATTGAGCAGTGGGGTTCTTGGGGAAAGAGGAGGCCCTTAGTTGCCATTTGCCATTATCCAAAATGTGAGCATT
GAAGCAGGAATGGAGGTTAGGGGTCCACTGCTTCTCAGTCCCTTCTAGAGCGGTGGTGGTGACAGGTGTGAGTGCTAA
GGAGACCAAGGCTTTGGGGAACACAGCTTATGTGTGCAGCATTGATTGTCTGATTGGTCCCTCTAGGGGCAACAGTAT
CGCTCCTTCGAAGTGGCCAGAATAGGGACCCTGAGAAGGAGGAGAGCCCTGCTTCTCAGTGCCTTCGCCGTTCCAC
CGGTCCCCGAGGGCACCTCATGTACCGGCTCCACAAACGCTTCAGTGCTCTGGAGTTGGAGCGGGCTTACAGCGAAA
TAGAACAAGTGCAGGTGAGCCACTGCAGTGAGCTGTGCCTGAAGGCCATGGCTGGGAGCTTAGAGGGGTCTGGGGAG
TCCAGGGCTAGGGTGGAGACAGCCTGGGGTCCAGCTACAGTAAGCTCTGGCTTGTCAAATTTGTAGGTAAACTCCCAG
AACTTACTTAAACTACACTTAGTGCTCTGCCCAGAGAGACAGGCAGCAGCATTCTAGGCGTCTAGAATTGTGCTAAAG
GCCCCAAAAGATAGAAGAGGGGAATTCTGTAGTGTGGGGTTCATCAGAAGTGGGGTATAGATTTGATAGATAGGTCAGA
GGATCATGAAGAGGATGTTGGTCTGTGAGCGCGGGATTGAAAGTGTATTGAACTGTGTATTTTGAGATCTGCTTCCTT
CTGCCAAGCAGATGGTCTGGCGGCAGTTGTGAAGGTGGGCATTCTCGCCTCCCTTCTGTATTTTAGATTATGACAGTT
ATGGGCAAGGGACTCGGTGGTTAGCCAGGCCCTGCTGATGGACCCCCAGAGCCTGGGCATCTGGAGCCGGGTGGAATC
TCAGAACCAGCACTAATGTTGGTTGCATTCCCTCCAACCTTAGGCCAGATCCGGAACCTGACGGTGCTGACCCCTGAGG
GGGAGGCAGGGCTAAGCTGGCCTGTTGGGCTCCCGGCCCTTTCACTCCACACTCTCGCTTCGAGGTGCTGGGCTGGGA
CTACTTCACGGAGCAACACACCTTCGCCTGTGCAGACGGGGCTCCCAAGTGTCCCCTGCAGGGGGCTAGCAGGGCAGA
TGTAGGGGACGCTGTGGACACAGCTCTGGAGCAGCTCAATCGGCGCTATCAGCCCCGCCTGCGCTTCGGAAGCAGCG
GCTTCTCAATGGCTACCGGCGCTTTGACCCTGCAAGGGGCATGGAATACACCCTCGACTTGCTGCTGGAAGCTGTGACT
CAGCGAGGGCACAGACGCTCCCTGGCCCCGAGAGTGAGCCTGCTGAGGCCACTGAGCAGAGTGGAATCTGCTTATG
CCCTATGTCACCGAGGCTACCCGGGTGCAACTGGTGCTGCCACTCTGCTGGTGAAGCTCCGGCCGCTTGGCTTTTC
TTGAGGCCTTTGCTGCCAGTGTTCTGGAGCCTCGAGAACATGCATTGCTCACCTGTTGTTGGTCTATGGGCCCGGGA
AGGCCGAGGGGGCCCTGACCCATTTCTCGGAGTGAAGGCTGCAGCAGCTGAGTTAGAACGACGGTACCCAGGGGCGA
GGCTGGCCTGGCTCGCTGTGCGAGCAGAGGCCCTTCGAGGTGCGACTCATGGATGTCATCTCCAAGAAACACCTGT
GGACACACTCTTCTTCCTTACCACCGTGTGGACAAGACCTGGGTGCGAAGTCTCAACCGCTGCCGTATGAATGCAATC
TCGGGCTGGCAGGCCTTCTTTCCGGTCCACTTTAGGAGTTCAACCTGCTCTGTCAACACAGAGATCTCCCCAGGTGT
CCCTGGGGCTGATCCCCCTCCCTGGTGTGGACCTTCTAGGGGGGCTCCGGTGGGGGCGAGATTTGACCGGCAGGCT
TCAGCAGAGGGCTGCTTCTACAATGCTGACTACCTGGCAGCCCCGCGCCGGCTGGCTGGCGAAGTGGCAGGCCAGGAA
GAGGAGGAAGCCCTGGAGGGGCTGGAGGTGATGGATGTTTTCTCCGGTCTCAGGGCTCCACCTCTTCGAGCCGTAG
AGCCAGGGCTGGTGCAGAAGTTCTCTCTGCGGGACTGTAGCCCCGGCTCAGCGAGGAAGTGTACCACCGTTGTGCT
CAGCAATCTGGAGGGGCTGGGGGGCCCGTACCCAGCTAGCCATGGCTCTGTTTGAACAGGAACAGGCCAACAGCACTTA
GCCTCTCCACCCCTGTATCTGCCATAGCCCCGGGAAGGGCAAGGCAAGGTGACGGACAGATGGAGGGCTTGCCACTGT
ATTTTTTTAAAAATAAGAAATGTTATTAAACGTATCTTCTGCCAACTGTTTTTAGGTCTAGGGAGAGGGGTAAGAAGA
AGAATCTGTGGTAGGGTGTGGAGAATTTGTCTGCCGGCTTCCACTGCCTTCCCCTTCTCTTCTCCTTCCCATCCCCGTC
CACAATGACCACAAGGCTGCTGTCTGTTACGTGACCTTTAATCCATCCAGCCCTCCCCACCTTCCGCACAGCGCGAGAG
GGGAGTCCAGAGCCCAGGGCCTGTGCTGGGCGGAGTGGCTGGTCCACCCTGACGCTTGTTACGGGCTCCTAGGTGTT
GCGCACGACCAGCGACTGCTCCAGTCTCTGCCTGCGCTGCTGGATCTTTAGAGGAAGTGTGAGCGGGGCGAGGGTTACA
GTGATCCTGGTGAAGTACCAGGGGTACCCCATCCTGGCACCCCTCCCTGGAAGAGTCTGGGAACCAGGAGACTACTG
CATGGGGGTGTAGGGTGGTGGACAGGTAAGTGTGGCCAGGTGAGAGGCAAGGCTGCCAGGACTGAAGGAGAGGGAGC
CTCGGGTTCTGGGCCTCCATTACCTTACAGTAGAAGTAGCGGCTAACGGCTTCTGGGACCAGGGCTGGTGGTAGAAC
TCAGCCCTGCGTTCTTCTCGGGGTTCCCTGCCACATCTGTCATCACCTGGGAGGGAGCACGGGGCCTGTGGTGAAGTTC
CCCTGAGGTGCATGCCACCTGCCCCAGCCGTTGTGCTTGTCTTCGCATCAGTGCTCCCGGAGCCCCACTTCACCTTGAG
ATCACGGCTCTGGGAGCGGAGCAGGTCTTGACGTAGCCTTTGGGGTCTCTGGAGAACTTAGCATGAAGTCCCTCTGG
ATCTTGAGCTGGTTTATGGAATCAATCGTCTCATGGATCTACAGGTAGAAAGACAATGATTTCCACCTGCCCTGTGCTG

CGGGAGAGGGAGAAGGGGGCAGGGTGCGGGGGTTGCTTCTCTTGTGAAGGAGAGTTCCCCAGAGCCCTTGCTTCCTCT
GAGTTC CRTGAGGGGAGCGGGGTGGGCAGAGCTGACCTTGGAATGAAGTCAGCTTCTCACACTAGGGAGGGGGCTGCGT
GTGCCCCCTGGCCTAGGCCCATGCTGTGGTCTGAGTGCTTTGTCTCTCTCTTGGTTTAAACGCCCCACTCCAGCTCTGGG
CTCAGGCCGCACCTTACTGTCCAGAGCACTGATCTCCTGCTGGTTGGCCGTGGACAGGAGGAAGCTACTCATCTGCCCT
TTCAGCGTTTCTCCACCTCCACATCTATGTCATAGCACGCTGTCTTCTTCTGGTCTGATGGGTCCACGCTGCCAGAGAA
GTCCAGCCTCTGATGTCCATGGTACACCACGGAAGCCCAGGGCTAGGGCTGGGGAGGGTACATGAGGAGGGTGGAGA
AAGCAGGGAGGGGACCAGGGAGCTAAACTCCCTGTCTGCGGGGAAGGCTGGGCCACCTCACCTGATGACGTGGTTGAT
CACAATGGGGTCAGGGGGCAGCAGCAGGGCTGTGAGGCGCTGGGGAATCTCAGAGAACTTTAGGCGGGGGCAGTCAA
AAATCTGAAGCAGGATAATTGAGAGGGAGGTCACCTGGTGTGTGTGTTTGAAGACACAGTAGCTAGTAACGATCCTTTC
GTTCTGAAAAGACCACAAGAAGCTGAGGGCAAGTCAGAATCCTGGGTGCTGATGGCAGCGAGCCAGGCTGGAGGTAG
AGAAACAGGCTATGGCTAATCGCGAGGCCAGTGAGGGCCCTTACGTCTGCCACATTCTGTGAGCAAGCTACTTAGCAC
CTTGGGTCTTAGTCCCTTACCTCTAGAATGGGGGTATCAACAGCCCCATTTACGGGGTTGTCATGGGAATTAGGTGAA
TCCGTGTACAACAAGTGTCTGAAGGTATATGGTAAATGCTCAATAAATACCAACTACTCTTTTTCTTATATCTATCTAC
TGTGTTTATTTTAAAATACATTAGTAGGTCAGGTCATTTTTTCATCAATTTTCATTTTTCTAGCTGCCAGACATGTGAC

Selection Cassette:

GGCGCGCCGGATCCCGGGCCGCTCTAGCTAGACTAGTCTAGCTAGAGAATTCCGCCCCCCCCCCCCCCCCCCC
CTCTCCCTCCCCCCCCCCTAACGTTACTGGCCGAAGCCGCTTGGAATAAGGCCGGTGTGCGTTTGTCTATAT
GTTATTTTCCACCATATTGCCGTCTTTTGGCAATGTGAGGGCCCGGAAACCTGGCCCTGTCTTCTTGACGAGC
ATTCTAGGGGTCTTTCCCTCTCGCCAAAGGAATGCAAGGTCTGTTGAATGTCGTGAAGGAAGCAGTTCTCT
CTGGAAGCTTCTTGAAGACAAACAACGTCTGTAGCGACCCTTTGCAGGCAGCGGAACCCCCACCTGGCGA
CAGGTGCCTCTGCGGCCAAAAGCCACGTGTATAAGATACACCTGCAAAGGCGGCACAACCCCAGTGCCACG
TTGTGAGTTGGATAGTTGTGGAAGAGTCAAATGGCTCTCCTCAAGCGTATTCAACAAGGGGCTGAAGGAT
GCCCAGAAGGTACCCCATTTGTATGGGATCTGATCTGGGGCCTCGGTGCACATGCTTTACATGTGTTTGTGCG
AGGTTAAAAAACGTCTAGGCCCCCGAACCACGGGGACGTGGTTTTCTTTGAAAAACACGATGATAAGC
TTGCCACAACCATGGAAGATCCCGTCGTTTTACAACGTCTGACTGGGAAAACCTGGCGTTACCCAACTTA
ATCGCCTTGCAGCACATCCCCCTTTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTTCCC
AACAGTTGCGCAGCCTGAATGGCGAATGGCGCTTTGCCTGGTTTCCGGCACCAAGAAGCGGTGCCGGAAGC
TGGCTGGAGTGCATCTTCTGAGGCCGATACTGTCGTCTGCCCTCAAACCTGGCAGATGCACGGTTACGAT
GCGCCCATCTACACCAACGTGACCTATCCCATACGGTCAATCCGCCGTTTGTTCACGAGGAGAATCCGACG
GGTTGTTACTCGCTCACATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGCGAATTATTTTTGAT
GGCGTTAACTCGGCGTTTCATCTGTGGTGCAACGGGCGCTGGGTGCGTTACGGCCAGGACAGTCGTTTGCCG
TCTGAATTTGACCTGAGCGCATTTTTACGCGCCGGAGAAAACCGCCTCGCGGTGATGGTGCTGCGCTGGAGT
GACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGGCATTTTCCGTGACGTCTCGTTGCTGCAT
AAACCGACTACACAAATCAGCGATTTCCATGTTGCCACTCGCTTTAATGATGATTTTCAGCCGCGCTGTACTG
GAGGCTGAAGTTCAGATGTGCGGCGAGTTGCGTGACTACCTACGGGTAACAGTTTCTTTATGGCAGGGTGA
AACGCAGGTGCGCAGCGGCACCGCGCCTTTCGGCGGTGAAATTATCGATGAGCGTGTTGGTTATGCCGATC
GCGTCACACTACGTCTGAACGTGAAAACCCGAAACTGTGGAGCGCCGAAATCCCGAATCTCTATCGTGCG
GTGGTTGAACTGCACACCGCCGACGGCACGCTGATTGAAGCAGAAGCCTGCGATGTCGGTTTCCGCGAGGT
GCGGATTGAAAATGGTCTGCTGCTGCTGAACGGCAAGCCGTTGCTGATTTCGAGGCGTTAACCGTCACGAGC
ATCATCCTCTGCATGGTCAGGTCATGGATGAGCAGACGATGGTGCAGGATATCCTGCTGATGAAGCAGAAC
AACTTTAACGCCGTGCGCTGTTTCGCATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTACGGC
CTGTATGTGGTGGATGAAGCCAATATTGAAACCCACGGCATGGTGCCAATGAATCGTCTGACCGATGATCC
GCGCTGGCTACCGGCGATGAGCGAACGCGTAACGCGAATGGTGACGCGCATCGTAATCACCCGAGTGTGA
TCATCTGGTTCGCTGGGGAATGAATCAGGCCACGGCGCTAATCACGACGCGCTGTATCGCTGGATCAAATCT
GTCGATCCTTCCCGCCCGGTGCAGTATGAAGGCGGCGGAGCCGACACCACGGCCACCGATATTATTTGCC
GATGTACGCGCGCTGGATGAAGACCAGCCCTTCCCGGCTGTGCCGAAATGGTCCATCAAAAAATGGCTTT
CGCTACCTGGAGAGACGCGCCCGCTGATCCTTTGCGAATACGCCACGCGATGGGTAACAGTCTTGCGGGT
TTCGCTAAATACTGGCAGGCGTTTCGTCAGTATCCCCGTTTACAGGGCGGCTTCGTCTGGGACTGGGTGGAT
CAGTCGCTGATTAAATATGATGAAAACGGCAACCCGTGGTCGGCTTACGGCGGTGATTTTTGGCGATACGCC
GAACGATCGCCAGTTCTGTATGAACGGTCTGGTCTTTGCCGACCGCACGCCGCATCCAGCGCTGACGGAAG
CAAAACACCAGCAGCAGTTTTTCCAGTTCCGTTTATCCGGGCAAACCATCGAAGTGACCAGCGAATACCTGT
TCCGTCATAGCGATAACGAGCTCCTGCACTGGATGGTGGCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAA
GTGCTCTGGATGTGCTCCACAAGGTAAACAGTTGATTGAACTGCCTGAACTACCGCAGCCGGAGAGCGC

CGGGCAACTCTGGCTCACAGTACGCGTAGTGCAACCGAACGCGACCGCATGGTCAGAAGCCGGGCACATCA
GCGCCTGGCAGCAGTGGCGTCTGGCGGAAAACCTCAGTGTGACGCTCCCCGCCGCTCCACGCCATCCCC
CATCTGACCACCAGCGAAATGGATTTTTGCATCGAGCTGGGTAATAAGCGTTGGCAATTTAACCGCCAGTCA
GGCTTTCTTTACAGATGTGGATTGGCGATAAAAAACAACCTGCTGACGCCGCTGCGCGATCAGTTCACCCGT
GCACCGCTGGATAACGACATTGGCGTAAGTGAAGCGACCCGCATTGACCCTAACGCCTGGGTGGAACGCTG
GAAGGCGGCGGGCCATTACCAGGCCGAAGCAGCGTTGTTGAGTGCACGGCAGATACACTTGCTGATGCGG
TGCTGATTACGACCGCTCACGCGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGGAAAACCTACCGG
ATTGATGGTAGTGGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACACCGCATCCGGCGCG
GATTGGCCTGAACTGCCAGCTGGCGCAGGTAGCAGAGCGGGTAAACTGGCTCGGATTAGGGCCGCAAGAA
AACTATCCCGACCGCCTTACTGCCGCCTGTTTTGACCGCTGGGATCTGCCATTGTCAGACATGTATACCCCG
TACGTCTTCCCGAGCGAAAACGGTCTGCGCTGCGGGACGCGCGAATTGAATTATGGCCACACCAGTGGCG
CGGCGACTTCCAGTTCAACATCAGCCGCTACAGTCAACAGCAACTGATGGAAACCAGCCATCGCCATCTGC
TGCACGCGGAAGAAGGCACATGGCTGAATATCGACGGTTTCCATATGGGGATTGGTGGCGACGACTCCTGG
AGCCCGTCAGTATCGGCGGAATTCCAGCTGAGCGCCGGTCGCTACCATTACCAGTTGGTCTGGTGTCAAAA
ATAATAATAACCGGGCAGGCCATGTCTGCCCCTATTTTCGCGTAAGGAAATCCATTATGTACTATTTAAAAA
CACAACTTTTGGATGTTTCGGTTTATTCTTTTTCTTTTACTTTTTTATCATGGGAGCCTACTTCCCGTTTTTC
CGATTTGGCTACATGACATCAACCATATCAGCAAAAGTGATACGGGTATTATTTTTGCCGCTATTTCTCTGTT
CTCGCTATTATTCCAACCGCTGTTTGGTCTGCTTTCTGACAACTCGGAACTTGTTTATTGCAGCTTATAATG
GTTACAAATAAAGCAATAGCATCACAAATTTACAAATTTAATTAAGGCCGCGGGATCGATCCCGTCGAGC
AGTGTGGTTTTCAAGAGGAAGCAAAAAGCCTCTCCACCCAGGCCTGGAATGTTTCCACCCAATGTCGAGCA
GTGTGGTTTTGCAAGAGGAAGCAAAAAGCCTCTCCACCCAGGCCTGGAATGTTTCCACCCAATGTCGAGCA
AACCCCGCCCAGCGTCTTGTCAATTGGCGAATTCGAACACGCAGATGCAGTCGGGGCGGCGCGGTCCCAGGT
CCACTTCGCATATTAAGGTGACGCGTGTGGCCTCGAACACCGAGCGACCTGCAGCCAATATGGGATCGGC
CATTGAACAAGATGGATTGCACGCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTTCGGCTATGACTGGG
CACAACAGACAATCGGCTGCTCTGATGCCGCCGTGTTCCGGCTGTCAGCGCAGGGGCGCCCGGTTCTTTTTG
TCAAGACCGACCTGTCCGGTGCCCTGAATGAACTGCAGGACGAGGCAGCGCGGCTATCGTGGCTGGCCACG
ACGGGCGTTTCTTGGCGAGCTGTGCTCGACGTTGTCCTGAAGCGGGAAGGGACTGGCTGCTATTGGGCGA
AGTGCCGGGGCAGGATCTCCTGTCATCTCACCTTGCTCCTGCCGAGAAAGTATCCATCATGGCTGATGCAAT
GCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCATTTCGACCACCAAGCGAAACATCGCATCGAGCGAG
CACGTACTCGGATGGAAGCCGGTCTTGTGATCAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCGCCA
GCCGAACTGTTTCGCCAGGCTCAAGGCGCGCATGCCCGACGGCGAGGATCTCGTCGTGACCCATGGCGATGC
CTGCTTGCCGAATATCATGGTGGAAAATGGCCGCTTTTCTGGATTCATCGACTGTGGCCGGCTGGGTGTGGC
GGACCGCTATCAGGACATAGCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGACC
GCTTCCTCGTGCTTTACGGTATCGCCGCTCCCGATTTCGCAGCGCATCGCCTTCTATCGCCTTCTTGACGAGTT
CTTCTGAGGGGATCGGCAATAAAAAGACAGAATAAAACGCACGGGTGTTGGGTGCTTTGTTTCGGATCCGAA
TTCTTCGAGGGCGCGCC

Targeted Locus:

GCCCCATATTTGTCTTTCTTTCTTTCTTTTTTTTTTTGTTTTTTTTGTTTTGTTTTGTTTTGTTTTTTTTGTTTTCA
ACACCTAGTATTTTATTCAGATAGCAGTCCTGTTACACATGGTCCAAGAACATTCAAATAAGAACTCAAATC
AGAAGTTAAAGATTGGTCTTCAAACATCATAGCCAACAATGCCACGTTTGCCTATGATCTCTCCGATATAAA
ACCACATCCACACCTCAGTGGCCACCAAACCATTCAGCACAGCTTCCCTAACTGTAAGGTGTTTGAAGCTAC
CAGTTTTAGCACTTTGAATGATTTTTTTTACACTCTGAATAGCTGTAGGGATTTACAGCAGGGGTTGGGGGAA
CCAGCTCAACCTTGGCGTAGTGCCAAAATGTGGCCAATCGAGGCTTCGAGTAAGTCACGGCAGCGGCTACC
ATCGACGGTGCCTTCTCCGCGAAGTTACGGATGAACTTGGCCATGGTCTAAGGTGGAAGGTACGTCTCCCCG
AACCACCGGCTGAATCCATATTTGTCTTTCTAAGTCTAGCTTATTTTGCTTAACATGATCTTCAGTTCCACCC
ATTTTCTTACAAACAATATAATCACATGCTTCTTTAAGACTAAATAATACTCCACTGTGGGAATATATTCCAT
GTATTATATCCATTTTTGTCACTGCTGAGGCAAGTATCATTAGGCAGACTCCATGAATTGGCTACTGTGGAT
AATTCCAGCAAACCTCCATGTCTTTGCTTTTGTCTTTCAGACAGTTTTGTTTGGGACAAAGGCAGAAAGCAGCC
ACATTCTTCATTCACCAAAACATCAGAAGAACAGTCTCTAGCCACATAATATCCTCTTCTGAAACCTCTTG
AGCGGCCTCCTGCACAGTTCAAATCCCCTCAGCACCCTGTCTTCTATGTTTTTACTAGAATGGCCCATTTAG
CAGCACTTAAATCATTCAACTGCTTTTCTAATCCAAAGTTCCAAAGTCCACACTCCTTTAAACAAAAGTAT
GGTCAGGCCTATTAAAGCAATATTTTGGGCTGGTAAGATGGCTCAGCGGTTAAGAAAACCGACTGCTCTTCC

[illegible]

CACATGTCCCTCATCCTTTTACCTAGTAGAGTTGAAAATTTAGTAGAGAAACATTTCTTGAGCCGCTAAATA
GGCGCTGGTGTTCGCGCGCCGGTTTGTAGTTGAAGCGTGCTCAGAAAAGGGGAGGGGCATCTTTCTTTAGCGCT
AACAGGGTTGAGATGAATTGGGGAGCGTCTCTGTGCAGACGGGATTCACTCACCGTGCGCTAGGAGCCAG
GGCGTTGGAATCCAGAGGTGCAGCAGCAACCATAGAGAGCGACTGTAAGGAGCGAGGGGCCGGATGCGGT
CACCATAGAGACGGGAGACTGACAGGCAGCGGAGGAGGAAGCCGAGGGGCTGGCTTGTGAGGTGGCAGCGG
CAGCAAAGCGGAGCTCCTCGGCCCGCCACAGGGTGGGCTCACCCGCGAGGCGGCTCCGTCTGCCGTGGGGC
TTGGGTGTTCTGTTCCCTGCCCCGCGAGGACCTGAGAACCCGCTCGGTCTGTGCCGCCGCGAGCTCCC
CTCCACCGCCCAAGTTCGCAGAGCAAACCAGCTGGACGCAAGGCCTTTTCTGCAGTCGTGGGACGTAGGCG
ATTAATTTCTGTCTCCAGACGGCCGGCTAGGACTCGCTCTGTCCCTTCTTCTGGGGGCTGGCAGCGGTGCTGT
GGTCGCCAAGGGAATAATAGGGCACTGACTGGCGCCCTATTGGAAGGTGCCCTGTTGGAAGGTGGTGAGCC
TCTGCTGGCCTTCCCAGACCCCCGCGTTTCTCTAACTGCTGCTGTCTCCCGGCTTGCTTTTGCTTTATTTGGCT
TTGTTTGATAACCTCTAGCCACAGCAAGAGTGTCTGTAATTTGTCTCCTGCTGTTCTTAGATATGTGGGCAGC
ATAGCTTTGCAGGACGAGTAGGATGGCTAGCAAAATGGCTCCATCAGCCATTGCGCTCCTATGAGAGGCCA
GCTGTGCTGAGTCACTGTGACTGCTCACCTCATTTGGGTGGGYAGGTGGGTGGGCACCATTATAGCTGGTG
ATCTTATCTGACAAGGAGGGGATTTCTAGAGTCTGTGGCTCTCTTTGACACTCAGGAGCGGGGTGGAAGGA
GGTGCTGACCCCTTCTCTAGTGCTYGCCTGCAGCAGCGGCAGATCAGCAGTTCCTCTGGGGCCTGAGGAGA
CATAGTGGGCCAGGATAGCTTCAGCATGGCACAGGGTGTCTGAGGCAGGCCCTTTTGGTCAGACTGTTGTTG
GAATGGCGCATGCACTTTGCCCTAAGCTCTGTGTCACTGGGTGCTGCTGACTTGAATTAGGCCCATGTTTCA
AATGGCTGTAGACCTTCTGGGGTTAGGTTTGGCAGGACTGCACTTTCTTTTTTCTTTTTCTGGACTACAGAC
TGCAATCCCCGTAGGGAGTGGCATTGCTCACATAGACATTAGTATTTTACTGAGGGTATCAGCACCATGGCC
ACTGAAGACCAGACATAGGGTTGGGAAGACTTGGTGGGGATGCTGGGCTCCTTTTTCTGTTGCTGACCTCGT
TGACTCCGGGTTCTCTGGGTAAAACCGTGGGCTACTGCTGGCCTGTGGCCCATCAACCTACTCATCCTTGAG
ACTGTGCCCTGGGGCGCCCTGTGTCAAGGCCTGCCACCATGCGACTGAGGCGCGCCGGATCCCGGGCCGC
TCTAGCTAGACTAGTCTAGCTAGAGAATTCCGCCCCCCCCCCCCCCCCCTCTCCCTCCCCCCCCCCTAACG
TTACTGGCCGAAGCCGCTTGAATAAAGCCGGTGTGCGTTTGTCTATATGTTATTTTCCACCATATTGCCGTC
TTTTGGCAATGTGAGGGCCCGGAAACCTGGCCCTGTCTTCTTGACGAGCATTCTAGGGGTCTTTCCCTCTC
GCCAAAGGAATGCAAGGTCTGTTGAATGTCGTGAAGGAAGCAGTTCCTCTGGAAGCTTCTTGAAGACAAAC
AACGTCTGTAGCGACCCTTTGCAGGCAGCGGAACCCCCACCTGGCGACAGGTGCCCTCTGCGGCCAAAAGC
CACGTGTATAAGATACACCTGCAAAGGCGGCACAACCCCACTGCCACGTTGTGAGTTGGATAGTTGTGAA
AGAGTCAAATGGCTCTCCTCAAGCGTATTCAACAAGGGGCTGAAGGATGCCAGAAGGTACCCCATTTGTAT
GGGATCTGATCTGGGGCCTCGGTGCACATGCTTTACATGTGTTTAGTCGAGGTTAAAAAACGTCTAGGCCC
CCGAACCACGGGGACGTGGTTTTCTTTGAAAAACACGATGATAAGCTTGCCACAACCATGGAAGATCCC
GTCGTTTTACAACGTCGTGACTGGGAAAACCTGGCGTTACCCAACTTAATCGCCTTGCCAGCACATCCCCCT
TTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGG
CGAATGGCGCTTTGCCTGGTTTTCCGGCACCAAGAAGCGGTGCCGGAAGCTGGCTGGAGTGCGATCTTCTG
AGGCCGATACTGTCGTCTCCCTCAAACCTGGCAGATGCACGGTTACGATGCGCCCATCTACACCAACGTG
ACCTATCCCATTACGGTCAATCCGCCGTTTGTTCACGGAGAATCCGACGGGTTGTTACTCGCTCACATTT
AATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGCGAATTATTTTTGATGGCGTTAACTCGGCGTTTCAT
CTGTGGTGCAACGGGCGCTGGGTGCGTTACGGCCAGGACAGTCGTTTGCCGTCTGAATTTGACCTGAGCGC
ATTTTTACGCGCCGGAGAAAACCGCCTCGCGGTGATGGTGCTGCGCTGGAGTGACGGCAGTTATCTGGAAG
ATCAGGATATGTGGCGGATGAGCGGCATTTTCCGTGACGTCTCGTTGCTGCATAAACCGACTACACAAATCA
GCGATTTCCATGTTGCCACTCGCTTTAATGATGATTTACAGCCGCGCTGTACTGGAGGCTGAAGTTCAGATGT
GCGGCGAGTTGCGTGACTACCTACGGGTAACAGTTTCTTTATGGCAGGGTGAAACGCAGGTGCCAGCGGC
ACCGCGCCTTTCCGGCGGTGAAATTATCGATGAGCGTGGTGGTTATGCCGATCGCGTCACACTACGTCTGAAC
GTCGAAAACCCGAAACTGTGGAGCGCCGAAATCCCGAATCTCTATCGTGCGGTGGTTGAACTGCACACCGC
CGACGGCACGCTGATTGAAGCAGAAGCCTGCGATGTCGGTTTCCGCGAGGTGCGGATTGAAAATGGTCTGC
TGCTGCTGAACGGCAAGCCGTTGCTGATTGAGAGCGTTAACCGTCACGAGCATCATCCTCTGCATGGTCAGG
TCATGGATGAGCAGACGATGGTGCAGGATATCCTGCTGATGAAGCAGAACAACTTTAACGCCGTGCGCTGT
TCGCATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTACGGCCTGTATGTGGTGGATGAAGCC
AATATTGAAACCCACGGCATGGTGCCAATGAATCGTCTGACCGATGATCCGCGCTGGCTACCGGCGATGAG
CGAACGCGTAACGCGAATGGTGCAGCGCGATCGTAATACCCGAGTGTGATCATCTGGTCGCTGGGGAATG
AATCAGGCCACGGCGCTAATCACGACGCGCTGTATCGCTGGATCAAATCTGTGATCCTTCCCGCCCCGGTGC
AGTATGAAGGCGGCGGAGCCGACACCAGGCCACCGATATTATTTGCCCGATGTACGCGCGCGTGGATGAA
GACCAGCCCTTCCCGGCTGTGCCGAAATGGTCCATCAAAAAATGGCTTTCGCTACCTGGAGAGACGCGCCC

GCTGATCCTTTGCGAATACGCCACGCGATGGGTAACAGTCTTGGCGGTTTCGCTAAATACTGGCAGGCGTT
TCGTCAGTATCCCCGTTTACAGGGCGGCTTCGTCTGGGACTGGGTGGATCAGTCGCTGATTAAATATGATGA
AAACGGCAACCCGTTGGTCGGCTTACGGCGGTGATTTTGGCGATACGCCGAACGATCGCCAGTTCTGTATGA
ACGGTCTGGTCTTTGCCGACCGCACGCCGCATCCAGCGCTGACGGAAGCAAAACACCAGCAGCAGTTTTC
CAGTTCCGTTTATCCGGGCAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAACGAGCTC
CTGCACTGGATGGTGGCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAAGTGCCTCTGGATGTCGCTCCACA
AGGTAAACAGTTGATTGAACTGCCTGAACTACCGCAGCCGGAGAGCGCCGGGCAACTCTGGCTCACAGTAC
GCGTAGTGCAACCGAACGCGACCGCATGGTCAGAAGCCGGGCACATCAGCGCCTGGCAGCAGTGGCGTCTG
GCGGAAAACCTCAGTGTGACGCTCCCCGCCGCTCCCACGCCATCCCGCATCTGACCACCAGCGAAATGGA
TTTTTGCATCGAGCTGGGTAAATAAGCGTTGGCAATTTAACCGCCAGTCAGGCTTTCTTTCACAGATGTGGAT
TGGCGATAAAAAACAACCTGCTGACGCCGCTGCGCGATCAGTTCACCCGTGCACCGCTGGATAACGACATTG
GCGTAAGTGAAGCGACCCGCATTGACCCTAACGCCTGGGTGCAACGCTGGAAGGCGGCGGGCCATTACCAG
GCCGAAGCAGCGTTGTTGCAGTGCACGGCAGATACACTTGCTGATGCGGTGCTGATTACGACCGCTCACGC
GTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGGAAAACCTACCGGATTGATGGTAGTGGTCAAATGG
CGATTACCGTTGATGTTGAAGTGGCGAGCGATAACCCGCATCCGGCGCGGATTGGCCTGAACTGCCAGCTG
GCGCAGGTAGCAGAGCGGGTAAACTGGCTCGGATTAGGGCCGCAAGAAAACCTATCCCGACCGCCTTACTGC
CGCCTGTTTTGACCGCTGGGATCTGCCATTGTCAGACATGTATACCCCGTACGTCTTCCCGAGCGAAAACGG
TCTGCGCTGCGGGACGCGCAATTGAATTATGGCCACACCAGTGGCGCGGCGACTTCCAGTTCAACATCA
GCCGCTACAGTCAACAGCAACTGATGGAAACCAGCCATCGCCATCTGCTGCACGCGGAAGAAGGCACATGG
CTGAATATCGACGGTTTCCATATGGGGATTGGTGGCGACGACTCCTGGAGCCCGTCAGTATCGGCGGAATTC
CAGCTGAGCGCCGGTTCGCTACCATTACCAGTTGGTCTGGTGTCAAAAATAATAATAACCGGGCAGGCCATG
TCTGCCCGTATTTTCGCGTAAGGAAATCCATTATGTACTATTTAAAAAACACAAACTTTTGGATGTTTCGGTTT
ATTCTTTTTCTTTTACTTTTTTATCATGGGAGCCTACTTCCCGTTTTTCCCGATTGGCTACATGACATCAACC
ATATCAGCAAAAGTGATACGGGTATTATTTTTGCCGCTATTTCTCTGTTCTCGCTATTATTCCAACCGCTGTT
TGGTCTGCTTTCTGACAAACTCGGAACCTGTTTTATTGCAGCTTATAATGGTTACAAATAAAGCAATAGCATC
ACAAATTTACAAATTTAATTAAGGCCGCGGGATCGATCCCGTCGAGCAGTGTGGTTTTCAAGAGGAAGCA
AAAAGCCTCTCCACCCAGGCCTGGAATGTTTCCACCCAATGTCGAGCAGTGTGGTTTTGCAAGAGGAAGCA
AAAAGCCTCTCCACCCAGGCCTGGAATGTTTCCACCCAATGTCGAGCAAACCCCGCCAGCGTCTTGTCAATT
GGCGAATTCGAACACGCAGATGCAGTCGGGGCGGCGCGGTCCCAGGTCCACTTCGCATATTAAGGTGACGC
GTGTGGCCTCGAACACCGAGCGACCCTGCAGCCAATATGGGATCGGCCATTGAACAAGATGGATTGCACGC
AGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTTCGGCTATGACTGGGCACAACAGACAATCGGCTGCTCTG
ATGCCGCCGTGTTCCGGCTGTCAGCGCAGGGGCGCCCGGTTCTTTTTGTCAAGACCGACCTGTCCGGTGCCC
TGAATGAACTGCAGGACGAGGCAGCGCGGCTATCGTGGCTGGCCACGACGGGCGTTTCTTGGCAGCTGTG
CTCGACGTTGTCACTGAAGCGGAAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCCTGTC
ATCTCACCTTGCTCCTGCCGAGAAAGTATCCATCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCC
GGCTACCTGCCCATTTCGACCACCAAGCGAAACATCGCATCGAGCGAGCACGTA CTGGATGGAAGCCGGTC
TTGTGCATCAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCGCCAGCCGAACTGTTCCGCCAGGCTCAAG
GCGCGCATGCCCAGCGGCGAGGATCTCGTCGTGACCCATGGCGATGCCTGCTTGCCGAATATCATGGTGGA
AAATGGCCGCTTTTCTGGATTTCATCGACTGTGGCCGGCTGGGTGTGGCGGACCGCTATCAGGACATAGCGTT
GGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCTTCTCTGCTTTACGGTATCGC
CGCTCCCGATTTCGCAGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGGGGATCGGCAATAAAA
AGACAGAATAAAACGCACGGGTGTTGGGTGCTTTGTTCCGATCCGAATTCCTCGAGGGCGCGCCAGGCAGT
CCCAGTCCCCCAAAGGTTGGCAGTGACTGAATGATTGCTGTCCAAACTGAATTCTCCAGACATCCTTTTGTC
CTTCCCAGAGGCCAGCTAGCCCCTTCCGCTCTCCCTTGCTCACCTTACAGCCCTGGGGCCATCAAAAAGTGTG
AAATTTTAGGGACCCCTGAACAAAACAGGAAGAGGTGCCTGAAGTCATCAACCTTCTGTCTGCCATCCTCC
CCACCCCTTTTCCACACCCAGTGCACATCACAATTAAGGACAAGGTGAAAATGTTCTAGAGTTCACCAACC
TAGCCCTACCCCCACCCCCACCCCCAAGGTGGAAAGCTCTATCATAGAAGGCTGATATCCCAGGGGCAAGA
CATCTTCCACACCTGCCTGCTGGGATGTCCTACAGCTGTATTCTCATTGAGCAGTGGGGTTCTTGGGGAAAG
AGGAGGCCCTTAGTTGCCCATTTGCCTTATTCCAAAATGTGAGCATTAGAAGCAGGAATGGAGGTTAGGGG
TCCACTGCTTCTCAGTCCCTTCTAGAGCGGTGGTGGTGACAGGTGTGAGTGCTAAGGAGACCAAGGCTTTG
GGAACCACAGCTTATGTGTGCAGCATTGATTGTCTGATTGGTCCCTCTAGGGGCAACAGTATCGCTCCTTCG
AACTGGCCAAGAATAGGGACCCTGAGAAGGAGGAGAGCCCTGCTTTCCTGAGTGCCTTCGCCGTTACCCG
GTCCCCGAGGGCACCCCTCATGTACCGGCTCCACAAACGCTTCAGTGCTCTGGAGTTGGAGCGGGGCTTACAG
CGAAATAGAACAACTGCAGGTGAGCCACTGCAGTGAGCTGTGCCTGAAGGCCATGGCTGGGAGCTTAGAG

GGGTCCTGGGGAGTCCAGGGCTAGGGTGGAGACAGCCTGGGGTCCAGCTACAGTAAGCTCTGGCTTGTCAA
ATTTGTAGGTAAACTCCCAGAACTTACTTAAACTACACTTAGTGCTCTGCCCAGAGAGACAGGCAGCAGC
ATTCTAGGCGTCTAGAATTGTGCTAAAGGCCCAAAAGATAGAAGAGGGGAATTCTGTAGTGTGGGGGTCAT
CAGAAGTGGGGTATAGATTTGATAGATAGGTTCAGAGGATCATGAAGAGGATGTTGGTCTGTGAGCGCGGG
ATTGAAAGTGTATTGAACTGTGTATTTTGAGATCTGCTTCCTTCTGCCAAGCAGATGGTCTTGCGGCAGTT
GTGAAGGTGGGCATTCCCTCGCCTCCCTTCTGTATTTTAGATTATGACAGTTATGGGCAAGGGACTCGGTGGT
TAGCCAGGCCCTGCTGATGGACCCCCAGAGCCTGGGCATCTGGAGCCGGGTGGAATCTCAGAACCAGCACT
AATGTTGGTTGCATTCCCTCCAACCTTAGGCCCAGATCCGGAACCTGACGGTGCTGACCCCTGAGGGGGAGG
CAGGGCTAAGCTGGCCTGTTGGGGTCCCCGGCCCCCTTCACTCCACACTCTCGCTTCGAGGTGCTGGGGTGGG
ACTACTTCACGGAGCAACACACCTTCGCCTGTGCAGACGGGGCTCCCAAGTGTCCCCTGCAGGGGGCTAGC
AGGGCAGATGTAGGGGACGCTGTGGACACAGCTCTGGAGCAGCTCAATCGGCGCTATCAGCCCCGCCTGCG
CTTCCGGAAGCAGCGGCTTCTCAATGGCTACCGGCGCTTTGACCCTGCAAGGGGCATGGAATACACCCTCG
ACTTGCTGCTGGAAGCTGTGACTCAGCGAGGGCACAGACGCTCCCTGGCCCGCAGAGTGAGCCTGCTGAGG
CCACTGAGCAGAGTGGAATCCTGCCTATGCCCTATGTCACCGAGGCTACCCGGGTGCAACTGGTGCTGCC
ACTCCTGGTGGCTGAAGCTCCGGCCGCTTGGCTTTTCTTGAGGCCTTTGCTGCCAGTGTTCTGGAGCCTCGA
GAACATGCATTGCTCACCTGTTGTTGGTCTATGGGCCCCGGGAAGGCCGAGGGGGCCCTGACCCATTTCTC
GGAGTGAAGGCTGCAGCAGCTGAGTTAGAACGACGGTACCCAGGGGCGAGGCTGGCCTGGCTCGCTGTGC
GAGCAGAGGGCCCTTCGCAGGTGCGACTCATGGATGTCATCTCCAAGAAACACCCTGTGGACACACTCTTCT
TCCTTACCACCGTGTGGACAAGACCTGGGTCGGAAGTCCTCAACCGCTGCCGTATGAATGCAATCTCGGGCT
GGCAGGCCTTCTTTCCGGTCCACTTTCAGGAGTTC AACCCCTGCTCTGTCAACACAGAGATCTCCCCCAGGTG
TCCCTGGGGCTGATCCCCCTCCCTGGTGTGGACCCTTCTAGGGGGGCTCCGGTCGGGGGCAGATTTGACC
GGCAGGCTTCAGCAGAGGGGCTGCTTCTACAATGCTGACTACCTGGCAGCCCGCGCCCGGCTGGCTGGCGAA
CTGGCAGGCCAGGAAGAGGAGGAAGCCCTGGAGGGGCTGGAGGTGATGGATGTTTTCTCCGGTTCTCAGG
GCTCCACCTCTTTTCGAGCCGTAGAGCCAGGGCTGGTGCAGAAGTTCTCTCTGCGGGACTGTAGCCCCCGCT
CAGCGAGGAAGTGTACCACCGTTGTCGCTCAGCAATCTGGAGGGGCTGGGGGGCCCGTACCCAGCTAGCCA
TGGCTCTGTTTGAACAGGAACAGGCCAACAGCACTTAGCCTCTCCACCCCTGTATCTGCCATAGCCCCGGGA
AGGGCAAGGCAAGGTGACGGACAGATGGAGGGCTTGCCACTGTATTTTTTTTAAAAATAAGAAATGTTATTA
AACGTATCTTCTGCCAAACTGTTTTTAGGTCTAGGGAGAGGGGTAAGAAGAAGAATCTGTGGTAGGGTTGT
GGAGAATTTGTCTGCCGGCTTCCACTGCCTTCCCCTTCTCTTCCCTCCTTCCCATCCCCGTCCACAATGACCAC
AAGGCTGCTGTCTGTTACGTGACCTTTAATCCATCCAGCCCTCCCCACCTTCCGCACAGCGCGAGAGGGGA
GTCCAGAGCCCAGGGCCTGTGCTGGGCGGAGTGGCTGGTCCACCCTGACGCTTGTTACGGGCTCCTAGGT
GTTGCGCACGACCAGCGACTGCTCCAGCTCCTGCCTGCGCTGCTGGATCTTTAGAGGAAGTGTGAGCGGGG
CAGGGTTACAGTGATCCTGGTGAGTGACCAGGGGTACCCCATCCTGGCACCCCTCCCCTGGAAGAGTCTGG
GAACCAGGAGACTACTGCATGGGGGTGTAGGGTGGTGGACAGGTAAGTGTGGCCAGGTGAGAGGCAAGGC
TGCCAGGACTGAAGGAGAGGGAGCCTCGGGTTCCTGGGCCTCCATTACCTTACAGTAGAAGTAGCGGCTAA
CGGCTTCTGGGACCAGGGCTGGTGGTAGAACTCAGCCCTGCGTTCTTCCCTCGGGGTTCCTGCCACATCTG
TCATCACCTGGGAGGGAGCACGGGGCCTGTGGTGAGTTCCCTGAGGTGCATGCCACCTGCCCCAGCCCG
TGTGCTTGTCTTCGCATCAGTGCTCCCGGAGCCCCACTTCACCTTGAGATCACGGCTCTGGGAGCGGAGCAG
GTCTTGAGCGTAGCCTTTGGGGTCTCTGGAGAACTTAGCATGAAGTCCCTCTGGATCTTGAGCTGGTTTAT
GGACTCAATCGTCTCATGGATCTACAGGTAGAAAGACAATGATTTCCACCTGCCCTGTGCTGCGGGAGAGG
GAGAAGGGGGCAGGGTGCGGGGGTTGCTTCTTGTGAAGGAGAGTCCCCAGAGCCCTTGCTTCCTCTGA
GTTCCRTGAGGGGAGCGGGGTGGGCAGAGCTGACCTTGGAATGAAGTCAGCTTCTCACACTAGGGAGGGGG
TGCGTGTGCCCCCTGGCCTAGGCCCATGCTGTGGTCTGAGTGCTTTGTCTCTCTCTTGGTTTTAACGCCCCAC
TCCAGCTCTGGGCTCAGGCCGCACCTTACTGTCCAGAGCACTGATCTCCTGCTGGTTGGCCGTGGACAGGAG
GAAGCTACTCATCTGCCCTTTCAGCGGTTCCCTCCACCTCCACATCTATGTCATAGCACGCTGTCTTCTTCTGG
TCTGATGGGTCCACGCTGCCAGAGAAGTCCAGCCTCTGATGTCCATGGTACACCACGGAAGCCCAGGGCTA
GGGCTGGGGAGGGTACATGAGGAGGGTGGAGAAAGCAGGGAGGGGACCAGGGAGCTAAACTCCCTGTCTG
CGGGGAAGGCTGGGCCACCTCACCTGATGACGTGGTTGATCACAATGGGGTCAGGGGGCAGCAGCAGGGC
TGTGAGGCGCTGGGAATCTCAGAGAACTTTAGGCGGGGGCAGTCAAAAATCTGAAGCAGGATAATTGAG
AGGGAGGTCACTGGTGTGTGTGTTTGAAGACACAGTAGCTAGTAACGATCCTTTCGTTCTGGAAAGACCAC
AAGAAGCTGAGGGCAAGTCAGAATCCTGGGTGCTGATGGCAGCGAGCCAGGCTGGAGGTAGAGAAACAGG
CATGGCTAATCGCGAGGCCAGTGCAGGGGCCTTACGTCTGCCACATTCTGTGAGCAAGCTACTTAGCACCTT
GGGTCTTAGTCCCTTCACCTCTAGAATGGGGGTATCAACAGCCCCATTTACGGGTGTGTCATGGGAATTAGG
TGAATCCGTGTACAACAAGTGTCTGAAGGTATATGGTAAATGCTCAATAAATACCAACTACTCTTTTTCTT

ATATCTATCTACTGTGTTTATTTTAAAATACATTAGTAGGTCAGGTCATTTTTTCATCAATTTCAATTTTCCTA
GCTGCCAGACATGTGAC