



Lexicon Genetics Incorporated – Genentech Project Materials

Genentech ID:	UNQ334	Date of Submission:	11/02/03
Lexicon Contract Name:	DNA291	Mutation Type:	X Standard Knock out
LexVision Name:	SEC551N1		☐ Conditional
Reference accessions:	NM_008003, ENSMUST00000033389	Is this gene X-linked?	No

Required Materials: X pKOS clone DNA(s) __KOS54, KOS69_____
X Target Vector DNA __KOS69-FTV (Puro)_____
X Targeted ES Cell DNA __1A4_____
X Genomic Map

Southern Blot Analysis: *External/Internal Probe Strategies*

	<u>5' External</u>	<u>3' External</u>
Name of Probe:	8+9	12+13
Restriction Enzyme for Genomic Digest:	HindIII	NsiI
Predicted Wild-type Band (kb):	10.2	12.8
Predicted Mutant Band (kb):	8.3	8.8
Probe Size:	327 bp	182 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:	16	5' Primer Name:	18
3' Primer Name:	17	3' Primer Name:	GT-IRES
Predicted Wild-type Band (bp):	345	Predicted Wild-type Band (bp):	none
Predicted mutant band (bp)	none	Predicted mutant band (bp)	502

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**

DNA291-8	5' – ACTGATGGAGTCACTCAACC
DNA291-9	5' – AAGACAGAAATCGCCATAACG
DNA291-12	5' – TTGCAGTTACCTGGTAGAGG
DNA291-13	5' – TGTGATGCGATTACTAACACC

PCR Genotyping

DNA291-16	5' – CCAGATCTGGCCGGCCTGGGC
DNA291-17	5' – CCGCACGCCCCGTTCCAC
DNA291-18	5' – GCGGAGACTTGATGCAATTA
GT-IRES	5' – CCCTAGGAATGCTCGTCAAGA

Genomic Sequence Deleted:

GGCGAGAAAGTGGAACGGGCGTGCGGTGGCCCCGAGCCCTGGTCTGGCCACTCTGTGGCTGGCTGTGTCTGGGCGTCC
CCTGGCCCAGCAATCCCAGTCTGTGTGATGAAGATCCACTCTTTCTCTACGGCTGGGGCAAGATTACCCGCCTGCAG
TACCTGTACTCCGCTGGTCCCTATGTCTCCAAGTCTTCCCTCCGAATCCGGAGCGACGGCTCTGTGGACTGCGAGGAGG
ACCAAAACGAACGAAGTGAGTATCATTCAGCCCGTCCCCTCCGGTCCCTTAGGACCCAGAAGCACGTGGGTGTGTGCG
CGTGGCCTTAACATCTCCCACCCCTGACTTCCAGACTGGAGCTGGGGAAGGGCGATGCAGTGTGGCCCCGCTGTACTC
ACGTGTTGCTGGGGCCCCGGCAACATCTTTCTCTTGCTCGCAGATTTGTTGGAATTCCGCGCGGTTCGCTCTGAAGACGATT
GCCATCAAGGACGTCAGCAGCGTGCGGTACCTCTGCATGAGCGCGGACGGCAAGATATACGGGCTGGTGAGTGTTCT
CCACGCGGCGGGATGCTCGCGGCCGCGTTGGGTCCGTATTGTTTTTGTGTTGTTGTTGTTCTTTTCGCTCCTGCTCAGGT
CCAAAAGGAAC

Genomic Locus: (the deleted sequence represents nt 9,554-10,186 in the sequence below)

AGGAGTGTCTGGATAACACCAACCACTGCTGCTGTTTCTTGCTGTGTAATTACAGGTGGCCTCAAGGTACCAGCAATCTTG
 CTTTGGAGTAGCCAGCACACTTATCCGCAGGCCTCCCATTCTGGGCCGGTTGGCTCACTCTCTCTCCACACTGCTGACCG
 AGCTTTCTTCCCTTGGCTGTCCACCACAGCCTGACTTCCTTCGTGCCATGAATGCTTACTGAACACCTGCAATGCCTGA
 ACACCTGGCTAGGGACTGGAGAGCCGATGAATTTGATGGTGTGGGGAAGAGGTCACTGCCTGCCCTGTGAGGGGACAG
 GTACAAGAGGCAACTATAAGGAGAAAATAAACACACAACTAAAGGTCATGCTGCCCCGTGGTGGGGTTGCAAGCTG
 GCACTCTGGTCTCACCACACTCAAGCCTCCGAGGAGCCTCCAGCTATCCAGGCATGACCATCATGCTTCCCCACCCACC
 ATCTGTCAATCAACAGTGGAGTTCATGGCTCACTGTGCCTTTCCTACAAACCTGGTCTTAAGGAAGAGCTTCTGTGCA
 ACCCTGGGCCAGTTTATCTTTGCAGTCTAGGCTTCCTTGTAACCTCCTTGGTAAAATCAGTCAGCAGAGTGGAGAAAGC
 TCGGTGGTTAAAAAGTACTTGCTGCTTACAGAGGACCCAATCTCTGTTTCTAGTTCTAATGGTCTGAGTTCTTGCAACTC
 CAGCTCCAGGGGCTCTGACACCCTCTACTGGCCTCTGTAGATACTGCACCAATGTGCTCACACCCTCTCCACAGAAATG
 TAATTTAAAAAATTATAATTTTTTTTAGAATTAATAATAAAAGAAGCCAGTTGGGTAGTGGTGGCATATGCCTTTAACCTC
 GGCACCTCAGAAGACAGAAGCAGGTGAAACTCTGTGCATTTGAGGCCAGCCTGGTCTACAGAGAGAGTTCAGGATAGC
 CTGGAACCTCTGTCTCGAGAAATAAACAAACAAATAATAAAAGAAAGAAAGCCACTGCCCTCGCTGTAGCAGGGAAAGGT
 AGTACTTGGCCTTTTCTGGGCCCTCTCCTTGCTGGCTAGGGCGTGCATCTAAGGCGCAACAGCCCAGCATGAACACCTT
 TAGTCCCAGCTCTGAGGAACCAGAGGCAGGTGGATCTCGGGGAGTTTGAGGCCAACTTGGTCTAGTCACTGAGTTTCAA
 GCCAGCCAGGGCTACACAGTGTGACACTAAGTAAAAAGAGGGGTCTGGGGTGAGGTAAAAACATCTGCATCGCCAGG
 CGTGGTGGCGCACACCTTTAATCCCAGTACTCAGGAGACAGAGGCAGGCGGATTCTGAGTTCGAGGCCAGCCTTGCTCT
 ACAGAGTGAGTTCAGGACTACACAGAGAACCCTGTCTCAAAAAAATCTGCATCATCCCTAGAAATGTTCTC
 CAGAGTGGAGAGCAGCCTGGGGAAACTGAGGGCCAGGAGGACCCAGGAAGCTTTTGGGTCTAAGGAGGACCTGGCC
 AGCTGACCTGCTGCTGTGTGCTCTCAATCCCCGTCTCTCAGCAGCTGGACCACAGTGGTAGCCCCAATTTGT
 TCCCTACCCATTAAACAGCCCGACCTGGGAGCCTAGCCCCACAGCTTTGGGAGCTGACACCCCCATTCTTATGCAATTC
 CGCCTCCCTTAGCCCTGCAAGTGTACCTGGCAAACATCTGTTCTGTGAATCAAAGCCTTGGGGACTTGCCAGGTTTGC
 CGGGTCTTGAGAATCTCATGAGCCCTTTGGAGACGGCTGGCTGGAGCTGCGAAAAGTTAAAAGGCTCCTCCTCAGCA
 GGCACAAAGTAGCCCGAAAATGGCTCAGGAGGTACAGCCCGGGCTGCCGAGGCAGCGGTGGAGCTAGCTAAGGCTC
 AGGTTCCACCCCAGGGCAGCGCCTCTGACCCTCGAAGGAAAATACCAGGAAGGTTCCGGCCGGAGAAGCCTGACTGGA
 AGGCCATTGTGCAGAGACCTAGGGCTTTGTTTAGGAGGAAGGTGACATTCAGGGACGTGTGAGACGAAGCTGTCTGTG
 TGCCTTTGACCACTGGAGCTTTACTGACGTCCCCAAATGTGGCTGCTCAGTGCTGACTGATGGAGTCACTCAACCACGT
 TACGGACTCCTTTGTCTGTGGCCCTGGGTCACTTTGAGAATATCATTTGTAGGTTTCACAGCTTCTGAGCTGTGACAGGA
 GAACAGTCTGTTACGATGGGGAATGTGAGGGAAAGATGGGAGGCAAGACAAGAACGAACCAGCCTCCCTCTTCCCCC
 AGCATAGTGTAGACCTTCACCCACTTAGAGCCCAAATACTCATCCCTTTACAGAGGAAGTTTGCCACCTGCTCTGA
 ACTGAGTTCCAATGAATATGGTTGCACATTTAAAAAATTATTTTGAGACGTTATGGCGATTTCTGTCTTTGGGTGTGAGCACC
 TGAAAACCTTGGGCACAGCCTTCAGCTTACCTGCCTCACCCACCGCCAGAGCCTTCAGTTCTGGGCTCTTCTTTCCA
 GATGGGTAAGGCTCTCAGGCTTTTGTTGGTTTCATCCTGGTCTGGTGGGAACTGGAGATGGACCCTCAGCACAGGAGG
 TTGGGATGGGAATGGTGGGACAGGACAGCCCTGCTGCTGTGGTCTTCACTCTCACCTGCCAGGCCAACTGAGGGGTATG
 AGGGAGCCTTGCCCTTCTGCTCTAGCTATGTCAATCATGAGGGGACCTCCTTGATTCTCAGGTGCAAGAGGCTTTCTAG
 GTGTCCTTGGGGAGGGGCCAATGGCTTTGCAGAAGATAGGAACTACACGAAGGGGTCCAGCCTCCTGGGCTCTGTGAG
 TGCCCTCCAAATTGCTCCTGACTATAGGACCTTCATACTGCACACAGGGAATTCCTGATGATGTATGTCCACACTCTGG
 AGACCACTGCCACACAGTCTCCCTCAGGGCAATGAGGGAGTCACTTGGCAGGTAGGGAGAAACACTTATGCCGGGCT
 GAATGGTGGTCCCCAAGATGCAGTCTTCCAGCCCCATAAGTGAATGTCCACATTCAAAAGAGCTTTCTGCAGGGAATGA
 AACAACAAACATCAGGATAGGCTGGGTGAGGTGGCATGTACCTTTAATGCACTTGGGAAACAGAGGCAGGTGGATCTC
 TGTGAGTTTGAGGCCAGCCAGAAGTACGAAGGGAGATCTTGTCTCAGAAGAAGGAGGAAGAGGAAAATGAGGAAGAG
 GAGGAGGAGAAACTGGCAGCATCCTTG
 TGGAGGTGAGGCTAAGCTCAAAGACGCACAGCCAAGAGCACCACAGGAGAGCCTGGAAGGAAGCAAAATAGGCAG
 CGAACACTTGAGATAAAGGCCAAGGCCAAGTGATCCTTTCTGAGGTGAAGGGGACTTGGAACCATCAGGAGCCAGAG
 AGGCTGAGGAACAGGCTCCAGAACCTGGAAACAAGTAATCCTGCCTGGATCTATTCTTTATTTTATTTTAAACCCAGTT

[illegible]

ACAGCATGGGAGTCCCCGGTCCTGAGAGCCTTCGGTGATGTCTTTTTGTAAAGGCTTTCCTGATGACATTCTCCCAGAG
CTCCGTCAATTAATGCCAGTCACTGATGGCGTCTGAAAGTGGCGTGTTTCTCATTGAGATTTCATCAGATCTGCCATTTCTC
TGCTGTCCCCGCCCTGCAGACAGACCTCCCATCACCACGGAGCTAGGCCAGTACCTTTTTACCCAAACCAGCCTCCTGG
GGCCCCACATACAGGAGTTGGGGGGTTGGAGGCATAATGAGAAAGGATAAGCGCTGAGCCAAAGCCCCCTGCGAGGA
CCCTTTCTTTTCAGGAAGGGGAATTCTCTGCAGGCTGCCTCCTTTTCTTTGCAAGAGCGGCTCTAGGAGAAGCCCCATTCT
TCCTCCCACCTGACCGGCCGCCAGCAGCGTCCACCGTTGCTCCTAGCTGGCCCCCTCCTCTCCGGTACGCAGCTGTCCCC
CGCGCACAGACTCAAGGGCCTGATCATCGACCCAAGAGGGGATCCCGCGGCCTGCCGTGCTTCTGCACGCTGGTCAGT
CCACCCTTCTCAAAAGTCGCAGCCCCAGTGACGTTCCACTTGTGGAGTCCACGCGCGAGGCAGGCAGAGGACGTGCAG
ACAGCGACTGGCAGCACATTGGAGACCGAACTAGGGCTGAAGCGCCACCTAGTGCGTGCGACACGTTCTCACGAGGT
CTCCACCTTGTAGGGCAAATATCCATGAAAAGGGAGCCTAGGTCTGGGGCCGGGAGAATGAGGGAGGGTAGGATCTGC
GATAGCGTGCTAAAGGAGAGATCAAGACTCAAACAGGGGGCTACGGAGGCAGAGCTCTGCTGCCTTCTAGTCTCTG
TGACTGTCCACGCGCATCCCTCTGAAAGGCCAGGGCCTGAAGACCTCAATAATTAATAGTAAAATTAAATAGCCTAT
TCAATAACCACCAAGATACTGTGCATTGAACACTTGCTCCCCAGGCCAGGGTCGCAAAGGGGGGGCTCCTCCTCTGCCA
GATCTGGCCGGCCTGGCGGGGTCAGTGGGTGGGGCTTGAATGGGTGTGTGCGGGGGCGGAGACTTGATGCAATTA
GGAGGAGAAATGCTCTGATGCCCCGGGTACCTACCCGCGGGGGCCCGCGGGACGAAACGTATATAAGGCCGCGTGCCCCG
GAGCCACCCCACTGTGCGAGCAGTAACTCTGTGCGCCCCACGCCACAAGCGCCCAGTTGCTTTGTGGGTTGTGCCTGCC
CTGCGCCTGCAACTTGAGTCCCCGCCGCATCGCAGTCTCCGCGCCACCTTTGTAACGGCCTTCAGGACCCCGAGGTGTC
ATGGCGAGAAAGTGGAACGGGCGTGCGGTGGCCCGAGCCCTGCTCCTGGCCACTCTGTGGCTGGCTGTGTCTGGGCGT
CCCCTGCCCCAGCAATCCAGTCTGTGTCAGATGAAGATCCACTCTTTCTCTACGGCTGGGGCAAGATTACCCGCCTGC
AGTACCTGTACTCCGCTGGTCCCTATGTCTCCAAGTGTCTCCTCCGAATCCGGAGCGACGGCTCTGTGGACTGCGAGGA
GGACCAAAACGAACGAAGTGAGTATCATTACAGCCCGTCCCTCCGGTCCCTTAGGACCCAGAAGCACGTGGGTGTGTC
GCCGTGGCCTTAACATCCTCCCACCCCTGACTTCCAGACTGGAGCTGGGGAAGGGCGATGCAGTGTGGCCCCGCTGTAC
CCACGTGTTGCTGGGGCCCGGCAACATCTTTCTTTGCTCGCAGATTGTTTGAATTCGCGCGGGTCGCTCTGAAGACG
ATTGCCATCAAGGACGTCAGCAGCGTGCGGTACCTCTGCATGAGCGCGGACGGCAAGATATACGGGCTGGTGAGTGTT
CCTCCACGCGGGCGGGATGCTCGCGGCCGCGTTGGGTCCGTATTGTTTTGTTTGTGTTGTTGTTTCTTTTCGCTCCTGCTCA
GGTCCAAAAGGAACCTCGAGGGCAAGGTACCAATGATAGTGGGGCTAATATTGCTCTTGCCCCGCCCTGCGTAAAGTGA
TGGCCCCAGGCTGTAGCGGGGGAGCAGGGAGACCAGAGAAGCTGTCTAATCTTCCCAAAGACTGGGCTAACTGCTGAG
TCCCATTACAGCTTTTCGGCCCCCTTTGATACTGAACAGGAAAGCCTCCTCTCCTGGCTTTGCGTGTTCTGGTCTCGATTT
CCTCCCCCTCCCTCAAATAAAAAAGAAAAGAAAAGGAAAGAAGGGTCTTTTCAATCAATTTTTCTTAGGTCCATGGTG
TGATGCAAAAATTAGATACTTTAGAAAGTACCCAAGATGCTCATCTGCTTGTGACCTGGGGGAACTGGAGTGAGGCCA
GATGGCTAGGTTACATAACCCCTAAAAATCGGTAGTCATGAAGTATGTAGGCTAGTGCTCTGTAGGAATAGAGGCTG
GGTTCAAAGAAGCCTTCAGCCCTACCTCTGGCAGTACCAGTGCGAGGTCCCCCAGTGGGGAAGGATGGCTACCGGACT
TAACGTTTTTGTGTTTGTGTTTCTTTAAGAGTCCCCAAATTGTCTGTGGCTCTGAAGTTGATTTATCTACATGAAAAGACC
ACA:GAGAAAGGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGGGGTCTG
CAGAGAAAGGAAGGGGCTTCAGAGGAGGGGTCCCCTGGCTGGAAGCTGACACCCAGGCCCAAGCAAAATCTCC
TGCTGTATCTTCTGAAGTCTTTATTTGTGCTGGGCAAGGAGTCCGACCTCCATTCTGCACTAATGTAAATGTGTAGG
AAGGCCCCATGGGAGCTTTGCCCCCAATTCTAGTGCCACCCCTGGATCTGGTGGGCATAATTCATTTTCAGACTCTCCTTT
TTAAAAATAGAAGCCCCATAATCCATTGTTTCTATATGGAAGAAAAAGAGTGACCAGTTGTCCATATGAATTCTCCAG
GAGAAATACATCCTGTGTTTATCTACAGTTCACATTTTTTTTTTCAGGGAACATGGCCCCCTCCTGCCTGGTGGCTCTGTCTC
AGTGCCATCAGCCAGGGCAGGAGCAATTGGTTTCTGGAATTAGCCTGTTATCAGAGCCTTATCTGCCAACTGTCTTCTA
CCTGCAGTTCAATGACCTCTGCATGCTTAGGCAGACACAGCCTGTGCTTATTGAGCCATGTAGGCTCCCCAAGGGAATA
TGGCACCACTGTGGGAGACTACCACTGGTACCTCAAGCCTGGGGACTAGGAATATTCTGGTACTTAGGATTAGGGACA
GCTTCCCACTGCATTCAATTTCCGGCCACCCACAGAGTGTGGGCTTGGTCCCTGGCATGGTGGGCGGGAGGAGTTGCGGA
TTATCCGGCAGATCCAGGACAGCTGCCGGCAGATCCAGGGGGCTTCTCTTCTCACAATGGTAGGAGACTCAACCACCTA
AGCATTAGAAAAGCTTCCTGAGCTGCAGGTCTAGACAGAAAGGATCCCTTTATCCCTGGTCCCAGGCGAGGCTGCAGTT
ACTACCCAGAAAATGTAATCTAACCAGGAGCAGGGTTTTGAAAAGTTGATAATGATCAGATTTCAATGTCAGTGTAA
AAACCAGGAAGATTTGCACACTGCCAGCTTCTGCGTGATATCCAGTTGGGGTGATAATTGGAATAATTCCAATCTTCT
GGAAGCGAAGGCAGGAGGAGTGCTGAGAGGTAAGGCCTCAGAGTTAGAGCCTGTCTCAAAAAACATGACATGGCTG
GGAAACTGAGCTAGTGGAGTGGTTTGCTAGCACACTCAAAGCCCTGGGTTCAACTGAGCACTGCATAAACCCAGCTC
AGTGGGGCTCCTTGTCATCCCAGCTCTTGGGAAGTGAGGCAGAAAGGATCAGGAGTTCAAAGTCAACRTGGTCCCGGA
GGTATTTGTTTCAAAAATGAAAATCCAGGCCTAACATGGTTATAGATGCCTTTAATCCCTGCATTTGGTGACAGAAGCAG
GTGGATCTTTGAGTTCTAGGCCAGCCAGGGCTACATATGGTAAGAATCTGTCTCAAGAGAAAGTTGCTGRATACTTCTG
GGATGAGCCAACAATCTCATGTAGCCCCAGCTGCTCTTCAACTCTGGATTTCTTGCCCTCCACCTCTCAAGGAGTGGGAT
GGTAGTCGAGCTCAGCCATGCCTTGATTTCTGTGTGCTTAAAGGCGGTTGATAGAAGAAGCACTCTGCTGGTTACCGCT
GGGACGGTCCACGGTGGTGCTTGTCTATGCACACAGCCTCTTGTCTCTTTCTCCAAAGATTCGCTACTCGGAGGAAGAC
TGTACCTTCAGGGAGGAAATGGACTGTTTAGGCTACAACCAGTACAGATCCATGAAGCACCATCTCCATATCATCTTCA
TCCAGGCCAAGCCCAGAGAACAGCTCCAGGACCAGAAACCCTCAAACCTTATCCCCGTGTTTCACCGCTCCTTCTTTGA
AACCGGGGACCAGCTGAGGTCTAAAATGTTCTCCCTGCCCTGGAGAGTGACAGCATGGATCCGTTTCAGGATGGTGGA
GGATGTAGACCACCTAGTGAAGAGTCCCAGCTTCCAGAAATGACAGGATTCCGACAGGATGGAGAAAACCCCAAGGTC

CCGTGAACCTTCCCCCTTAGGAAGCTGTACATATTCTAAGTCTCACATGGACCCTGTTGTGTTAGTGGCTAGACTTGATCA
TGAACCTAAGTTGACAACCTGCCTGGCTGCCATCGGAGCCCCACTGACTTTGGAGGCTGCTGATATGTGCCTAAGTTAC
TCCAGTTCTGTTTGAATACCTCCACTAATAGGGAACCTACTCCTGTGAAACATTCTTAGTTTTGAGCCAAATCTGTGACT
TGGATGGTTTTAGCGAGGAAGCCAGAAGGTATGAAGTCAAATGATAAAATTCATGTATAGAAAGTGGGCTCTAAAATA
TATATCCCTATATGGATCTCATGGGATCTTAGCTTGCCCCCAAATGTCTCCTGGCCAGAACTAACTGGGGTTACAAAC
TTGGAACAAAGGACAGCCTAGAAAACCTTTGGGAGCCTTGAAGGATGGTCTTAGGATTACGAATTCCAGCTGACTACGT
AGCTTCCCCCTTTTCCACTTATAAATGTCAGATGGAAGTGACCCTTAGCTGAGTGCATAGCCAAGCTGCCACTTATGCCC
CAGGAGCTTGTCTCTGTCCCATGACCCAGATTTCCAGGACCTGGATCTGCTCCTCTGACCTTTCCCAGAGTTCACCTGG
GCTCTCCAACCCAGAGCAGGTAGCTTATGAGCCATCCAGTTGTGTCCCCAGCTCCTGGCTCTCAGTTCTGGTCACCAA
ACATTGTGAATCAACGTGTCTGCTGCCTGTGTCAACCTGGATCCCTCATTTTACAAACAAGATTAGGAAGCCCCAAATTC
TCCAGTGGCAGCTGGGGAACCTGTGGAGTCCCTTTCCCGGCACATTACGTGGCAGCATGATATTTATAAGTAATTTATTGT
GTGTGTGTCTTCTATTTTCTTACTTTATTTATGCCCCAGATCATATTTATGTACATGACTTGTTTTTCTACATTAAAAAGGA
GTTGGTTTGTATCAAAAAGTTATTTGTTCTATTCCAAGTGGGGTTCAGAGGAGGCACAGGTGGGAGGGTCCACTGACTGT
TAGGGGCTTACAGGGGGGCTGGTGCCTTTGTTGACAATGGGTGGCTCCCTTTCTGACTGCTAGGACCCCTCATACCCA
ACCTCCAAATGAGGCTAGGAGGATACCATAGCTTAAGTCAGAAAGCCCCACTGGCTTTTGCCAGTTTGGGACATGCTAG
CTGATGGGAGTGTGAGTGCAGAAAGAGCTTATTGGAAATTCACACATACATACACACTCACACACACACACACACAC
ACACACACACACACACTCACTCACCTTCTCTGGGTCTTACTAGGACAAAGCTTCTCTATTATACAGCTCTGGCTATC
CTGGAACCTTAAAGTAGACCAARCTGGCCTTGAAGTCAGAGATCTGTCTGCCTTTGACTCCTTAGTGCTGGGATTAACAG
CATGCACCACCAGACCTGGGTGTACCTAAAGACAGTCTCTTTGTCCAGCATCAAGTGCAGAGGGGAATCTGGCTTCAG
GCATGTGTCTGATGTCTGCCTGTCCAGGCTGTCTCATTGGGAAAGTCAAAGCTTGCTTAAACTTTTTGGCAAATTCCTC
TGCCATCTAGCAACCAGGAATTTACCACGGGGCTAGTTATCCACTGCCCCACCCAAGCCCTAGCTGCAAGGCAGGCTG
GGAAAGCAAGTGTGACTGACACTGGAAGTAGTGCTGGGTAATGGTGACAGGTCCATGTGTCTCAGCTGGTGGGTTCAA
GAACAATGGCTGTCTAGTCTTCTGATTGCTAGAGGAGGGGCAGGAGCAGGGTGGCTCTGAGAGGGCAACTGAGGGCC
TTTGCCATCCGTGGCTCTTAGTCACTATGAGAGGATCAGAGGTGTGTGTCTTCCCCACGGGAAACAAAGCTCAGACGTT
TAGCCTTTTACCTCTGATGGATTAGGAAGTACTCTGGAAAAAGCTTCCAAAGACCAGAAAGGAGAAAGAGGGTGGGT
GGGGCGAGTAAGAGCTGAGTGGCTCTGGGGAATTGGTGCCAGAGATGGAAATGGGCCTGGCCTGTGACACCGCTGAGG
TATATATTTTGTCTGGTCCCCATTTCTGCCAGACAGCTTCGGACATCCTGGGAGTCTCAGAGAAGATGTATCTTTTTG
GTATGCTAATTGTCTCGCTGAGCTGGAATCCCTCACTCCAGGTGAGCGACACCCACCCAGCCTGAAGAAGTATGTTGG
CCTGGTCTAAAACGCCACAGCTGCGGGTCTGACCCACCATACTGTTCTACGAAGTTTCCATTAGCTCCTGCCTCAGAA
AAGTTTCTGGAAGCCTCTGAACCTACAGCTCAGGTAGCACTCAGGAGATCTGGGAAACACAGAGCCTTCTCTACACCT
GATTTCTGCTGCTGCCCTTCTGGGCCCTTTACAGTCTGAGCACGAGTCTAATCCCAGCCCTTGGGAGGCAGGTAGTGA
GTTCCAGAACATCCAGAGAAATGAAATGAGACCCTGTTTCAAAAACAAAACACCAGTCTGTGGTTAATATATTATATAT
TAACATAATATATAATATATAATATAGTGGAACCCAGGAAGAGGGGTTTTAGGTGGGCACCGGAACCTGTAGTCAGC
GGGACCAAAGCATAGGAGGAATACTGAGTTGGGGGAGGGGAGTTGTTGAGGAGGGCGCCCTGTTGCAGTTACCTGGT
AGAGGTGAGAGACCATGGAAGGGATCTGCACTGTAAACAGACAGTAGGGGAAAACCTGAGGATACACTTTTTCTCTTTCT
AGACTCCCCTTCCCCACAGTGAAGACCAGTTGATAGGGATGTGACTGGGGCGGTGCTCTGCCATTGGTGTGTTAGTAA
TCGCATCACATGCAAGTGTCTTGATACTATTTGTTTCATGTCTTGTTTTTTGTAGACAGGATTTCTGCTGGAACCTGTCTG
TAGACAAGGCTGGCTTCAAAATCACAGAGATCTGCCTGCCTCTGTCTCCCAAGTGCTAGGGTTAAAGATGTGCCCGCC
ACTCCCCCTGCAGTTTGATGAGCTTTTTTTATGGCCGGTCTTCACAGAGGTTTTCTCATGCCCATTTGTTTTAAGGGAT
TTCATCACTGCTGGTCAAGGATTCCTGCTGCAAATGTTTACTTCTTGCCTTGTGATTTTGTGTTTACTGTTTTCTGAG
ACATGGTCTTCTGCCTCAGTCTCCTGGGATGACCATTGTGTGCCAAGGGGTAATTTTGTATCATTTTCTCTCTCCCTCCC
AGCGACTTCTACACTTCATGCTTGCTTTCCGCCCCAGCCTTCCCACAATGCTCCCACTGAAGACAGTATGGACCTTAGG
ACAGGGTCTGCAGATAGTGGAATACATGGGTGTGTTTGTCTGCCATCTTGATAAAACAGCAGTTAAAAAATAGTTTTAA
AGTTTGTGTTTGTGTTTGTGTTTGTGTTTGTGTTTGTGTTTGTGTTTGTGTTTGTGTTTGTGTTTGTGTTTGTGTTTGT
ATCTGGAACCTTGCTGTGAAGCTGAGAAGTGGCTGCAATTCTCCTGTCTCATTCTTCCAAACTGGGATTATCTGAGACATC
ATGTCTGGATTTAGAGTACCCCCCCCCAAAAAAGACGATTCTTTACTTTTATTTTATGTATATGGGTGTTTTGCCTG
CAACAGACTGCATGCACATCATGCTCTTGGAAGCCAGAAGAGGGCATCAGGTCCCCCAGAGTTTTCAGATGGTTGAGAG
CCATCCTGGGGACACTGGGATTTGAACCTGGGTCCCCTGCAAGAGCAGCAAGTGTCTTAACTATCAAATCATGTCTTC
AGTTTGTGGACTTTTAAAGTTGATGCTAGTGATGAGACCCAGGGTATTGGGAAATGGCTGGGATTCTTTTTCAGACAGGG
TCTGCCTCAGGCTGGCCTCCAACCTCTCTGACCTTCTGCTTCAACCCAAGCACTGGAATGATAGCGAGAAGTGTCTCTGC
CCAGCTTCAGGAAATGTGCTGTGTAGAGAGAATGAGTTCTATGGACGTGTGCTGGATACTATATGATGATGGTAGTTTG
GTGAGGAGGTAATGTTCTATGTTTACAAAGAAAAAACAATCTCAGGGCTGCAGAGATGGCTCATCAGTTAAGAGCA
CTGGTTGCTCTTGCAAGGACCCAGGTTCCATTCCCACTACCCACATAGCAGGTCAAACAGCCTGGATCTAATAAGTAA
ATAATTTTGTGGTAGTATTGTAGAATCAACCCTCACACCAGGACCTCACACTCAATAATAGGCAATAGCTACAGTGTCT
GCCCCAACAGAGCAAATCCATATCCACCGGCAATACACAGATAAGTAAGTATTTAGGCTGTAAGCAGGAGCAGAGAGTA
TTCTCATCTCTGTCAAAGGCCTGAAGGGTAATACTCAGTATCCACATGTACAAGTCTGTCTTCAAATAACTGAAAAACA
AAACAAAAACCAACACAGACACAGAGGTGTGGGCTATTTTTGTTTGGAGACAGGGTTTACCCTGCAGCTCTGACTGTC
CTGGAACCTTACTTGTGTAGACCAGGCTGGCCTTGAAGTCACAGAGATCCTCTTGTCTCTGCCTCCGGAATGCTAGGATT
ATCGACATGTGCCACCACGTCTGGCAATGTGTAGGGTTTTAATGCTATTGTTTGGGCTGGAGATAGGACTTAGAGCTTC

CCAAGCCTATACATGCTCATCACTGAGCTGTGAGTTACAGCTCCTGTCCCAGGCTTGCCCTCTCTATGCCTGCCTCCCGG
AGGATATTGCAGTGGCTGCCCCGCCCTGTGTCTGCTGCCCACTCCTGGTTTTCTTGATGGCATCATGTAGAGCAGACCCTG
GAGACTTGTTGTTGATCCAGGAAGTGTAGATGGCTGGGGGGAAAACCTCACCTCCTTCGTGAACTCACAGAGGTTCTGA
GGCTGGCCTCTCATGATGACTGCCAAGCCTTGTGGTTACAGTACCACAGTGTCAACAAGCAGGAAGATCAGATCAGATC
AGCTGTACAAGAAAGAATGGGTACAAACACGTGTGTCATATATGCCTTGCAAGTGCACAAAGACCATGCCAAAAGAAGGNN
NN
NNNNNNNNNNNNNNNNNNNNNNNNNNNGAGATGTCAGGGATGGGGCCACAGGTGGACCACAGAGGAGCAAGCAAAAGG
CCCGGGGAAAAAACAGAGCATCGCAAAAGAAAAAAAAGGGGAAAAGGAGAGAGGGAGAGAGAGAGAGAGAGAGAGAG
AGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGAGGAAGTAGTTGCTTGGGATAAGAGAGGTGGAAGAACTCTTTCTATAAC
CGCCTTTTTTTCTTTTCTTCCAAAAACCTTTTAAAAGGAGCTGGGGAGGGGGATGTTGCAGGGAAAGGAGTAACTGGA
AATCATCATGTTAATGAAATAAGACAGACTCTGGCCAACAAGAGGGCTCATTGAATAAAGTGGCTTGCCACCAAGCCA
GATGCCTGAGTTCATCCCTGGATCCTCAGGGTAAAAAGAGAACTGACTCCTGAAAGTTGTCCTCTGACTTCCATATAT
GTGTACATACACAAAATAAAATAAAATTATGAAAAACGAAACCAGACTCAGAATGGCAAACAGTGTGTGTTCTCTCTCA
TACACAAAACCCAGATTTAAACCTGTGTATGTGGAGTAGGGAGAGAATGCTCAGCACGAAAGATCACTGGCTGCTCTG
GAAGAGGACCCAGGTTCCGTTCCAGAACCCACCTGACAACCTATAACTGTAACCTCCAGTTCTAGGGGAATTAGAGCCT
CTACTGGCCTCCTCGGGTACTGCATGCATGTGGTGCACATACAAACATGCAGGCAAAACAGGCACATGCATAATTACAT
TTTTTTTTTTTTGAGACAGGGTTTCTCTGTGTAGCCCTGGCTGTCTGGAACCTCACTTTGTAGACCAGGCTGGCCTCAA
CTCAGAAATCTGCCTGCCTCTGCCTCCCAAGTGTGGGATTAAAGGCGTGCACACCACCACCTGGCTACATTTTATGT
CAGTGTGTCATAGACAGGAGGTCATGAGAGGAGAGGAAGGGATCTTAAAGGAGCAGGAGGAAAGCGGAAATAGAATT
CACGTGACCTGGAGAAAAAGGAGAGGGGTTAAAGCATTTGTCCAGGTCATGAAGACTGGATCTCAGTACCACTGTCAC
TGGGTAAGTGTGGCGCCTGCCTGTATCTCCAGCCTCTGAAGGCATAGACAGAGGCTCCCCAGAACAAGCTGGCTAGAG
AGGCTGTGCATATTGGTGAGCTCTGGGTGTAAGTGAGACACTGCCTCAAAGAATTAAGTGGAAGACTGTTGGAGGTTT
CTGACACCAGCCTCAGGTCTTCATATCCACATGCACACACACACACACACTTAAATATAAAAATTCCTTCAATTC
CAGCACTCAGGAGGCAGAGGTGGGCGGAGATAAGTTTGAAGTTAGCCTGTTCTGATCTATATAGAGACTGTCAAAAA
AAAAAAATCCTGGTGTGGTGGCATATGGCTTCAATTCCAGTACCAGGGATGCAGATAGAGAGGCAGGAGGATGTCTGT
GACTTCGAGGCTTGTCTGGTCAACTCAGTGAGTTTCAGGATAGCTAGGACTACATAGTGAAACCCTGACTCAGAAAA
AAAACAAACAAACCAAAAATTAAGAGATAACTAAGATGACCCAGGGTTTCTGCATAGGTCTGTGAGGACACAGGCTT
CAGTGGCCAGGCCTGCCCACCTTGACCTCAAGGGCTGACACTGCCACCTGACCTACCCCTTCATAAGATTTTGTCTGG
CAGTCCTAGCAGACATTAATAAGCATGTATACTCATCCGTCTCTCATTTACCCGTTTCAGGAAGGTGGAGGCCTAGAG
TGGCCAAGGGGTTTGTGTGCCTCCTGTGGTATGGTGTACATCTGGAGGCTGGGTGAGGAGGTGGGCAGCGCAGCCTG
CAGTGACCAGCATGGGCCAGTCTGGACATCTTGGGTATACTGACATGCCCTGAGCTGAGGGGATCCCAGTGTGTCTGCT
GGCTGAGTGTCCAGCTGTGGCGGGCAAGGAATCTCAGGGTGTGTCTTGAGTGATATCAGCCAAATCCCTCCCTAGTTGT
AAAAGTAAAGCTCGACTCTTCCACGACCCTTATAGTCGTGGCTAGGGGCAGAAAGAAAGAAATGAGACCTGAATATTT
TTGCAGGGAAACCGCGATCGGCGGCGCCTCAGAGCGTCCGAAACGCAAGCGCGCCTCCTGGTGGTCCCTCACCGAACT
CGCCGCGCAGGATGCCTGCGCTTCCAAAAGTGTCCCGTGGGCTCAGAACCTGCAAGCTGAGAGGTGACAGGATGCGG
ATCCAATAGATGCAAGACATGCTGGACCTTAGTGCAGTTTGATCTGAGGGTGGCGACTGCTTCTACTCGCCTATAGCT
TCAGACAATGCCAGGCCAAACAAAGTTCTCCGAAGGAACCTACTATGTGAAGGGAGCCCCACAGGCAGCTAAAGAGTGT
TTAGTTCCTTCCCACAACCCCAAGGTGCTATGCATCGAGAATTTGCTGTGGTGGTGGCTCACCTGTCAACCACGGCACTC
AGGAGATTGACTTGAGATCATTAAGAGTTTAAAGGCCAGCCTTGACTACATCGTGAGTTTGAGGCTAGCCTGTGCTACAT
AAAACCCTGTCTTAAAGGGCAAGCAAAAAAGGGTCTTGAGGAGACAGCACAGCAACGTTAAGACACTAGCCACTAA
CCCGGATGTCGTGAGTTGGATTTCATGATCTTCACATGGTGGATTGTGTTAGCACAATCCTGCAAATTGTGCTCTGACTTC
TACATACATGCCATGGACTGACCCCCCCCCCTAATAAACTTAAAAAGAATTAAAATAAGCAAACAAGGAAAAAACCC
AAACTGACAAAATATTCCCCCCCCCAAAGAAAACGAAAAACAAAAACCCAAAGTAAAATTTATTTACTATTTAGAGTA
CTTATTCGTACAACCAGAGATAAGGCAGGGATAAATACAGATGCTGACGTCATTTT

Selection Cassette:

CTCTAGAGGCCATAGCGGCCATTTAAATGGCGCGCCGGATCCGAATTCCTCGAGGCTAGAACTAGCGATAAGCTTCGA
GCGGGATCAATTCGCCCCCCCCCTAACGTTACTGGCCGAAGCCGCTTGGAATAAGGCCGGTGTGCGTTTGTCTATATG
TTATTTTCCACCATATTGCCGTCTTTTGGCAATGTGAGGGCCCGGAAACCTGGCCCTGTCTTCTTGACGAGCATTCTAG
GGGTCTTTCCCTCTCGCCAAAGGAATGCAAGGTCTGTTGAATGTCGTGAAGGAAGCAGTTCTCTGGAAGCTTCTTGA
AGACAAACAACGTCTGTAGCGACCCTTTGCAGGCAGCGGAACCCCCACCTGGCGACAGGTGCCTCTGCGGCCAAAAG
CCACGTGTATAAGATACACCTGCAAAGGCGGCACAACCCCACTGCCACGTTGTGAGTTGGATAGTTGTGGAAGAGTC
AAATGGCTCTCCTCAAGCGTATTCAACAAAGGGGCTGAAGGATGCCAGAAGGTACCCCATTTGATGGGATCTGATCT
GGGGCCTCGGTGCACATGCTTTACATGTGTTTAGTCGAGGTTAAAAAACGTCTAGGCCCCCGAACCACGGGGACGTG
GTTTTCTTTGAAAAACACGATAATACCATGGGGGATCCCGTCGTTTTACAACGTCGTGACTGGGAAAACCTGGCGTT
ACCCAACTTAATCGCCTTGACGACATCCCCCTTTCCGACGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTT
CCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGCTTTGCCCTGGTTTCCGGCACCAAGCGGTGCCGGAAAGCTGGC
TGGAGTGCATCTTCTGAGGCCGATACTGTGCTGTCCTTCAAACCTGGCAGATGCACGGTTACGATGCGCCCATCTA

CACCAACGTAACCTATCCCATTACGGTCAATCCGCCGTTTGTTCACGAGAAATCCGACGGGTTGTTACTCGCTCACA
TTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGCGAATTAATTTTATGATGGCGTTAACTCGGCGTTTCATCTGT
GGTGCAACGGGGCGCTGGGTTCGGTTACGGCCAGGACAGTCGTTTGCCGTCTGAATTTGACCTGAGCGCATTTTACGCGC
CGGAGAAAACCGCCTCGCGGTGATGGTGCTGCGTTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGAT
GAGCGGCATTTTCCGTGACGTCTCGTTGCTGCATAAACCGACTACACAAATCAGCGATTTCCATGTTGCCACTCGCTTTA
ATGATGATTTACAGCCGCGCTGTACTGGAGGCTGAAGTTCAGATGTGCGGCGAGTTGCGTGACTACCTACGGGTAACAGT
TTCTTTATGGCAGGGTGAAACGCAGGTTCGCCAGCGGCACCGCGCCTTTCGGCGGTGAAATTATCGATGAGCGTGTTGGT
TATGCCGATCGCGTCACACTACGTCTGAACGTCGAAAACCCGAACTGTGGAGCGCCGAAATCCCGAATCTCTATCGTG
CGGTGGTTGAACTGCACACCGCCGACGGCACGCTGATTGAAGCAGAAGCCTGCGATGTCGGTTTCCGCGAGGTGCGGA
TTGAAAATGGTCTGCTGCTGCTGAACGGCAAGCCGTTGCTGATTTCGAGGCGTTAACCGTCACGAGCATCATCCTCTGCA
TGGTCAGGTATGGATGAGCAGCATGGTGCAGGATATCCTGCTGATGAAGCAGAACAACTTTAACGCCGTGCGCTG
TTCGCATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTACGGCCTGTATGTGGTGGATGAAGCCAATATT
GAAACCCACGGCATGGTGCCAATGAATCGTCTGACCGATGATCCGCGCTGGCTACCGGCGATGAGCGAACCGTAACG
CGAATGGTGCAGCGCGATCGTAATCACCCGAGTGTGATCATCTGGTCGCTGGGGAATGAATCAGGCCACGGCGCTAAT
CACGACGCGCTGTATCGCTGGATCAAATCTGTGATCCTTCCCGCCCGGTGCAGTATGAAGGCGGCGGAGCCGACACC
ACGGCCACCGATATTATTTGCCCGATGTACGCGCGCGTGATGAAGACCAGCCCTTCCCGGCTGTGCCGAAATGGTCCA
TCAAAAAATGGCTTTTCGCTACCTGGAGAGACGCGCCCGCTGATCCTTTGCGAATACGCCACGCGATGGGTAACAGTCT
TGGCGGTTTCGCTAAATACTGGCAGGCGTTTCGTCAGTATCCCCGTTTACAGGGCGGCTTCGTCTGGGACTGGGTGGAT
CAGTCGCTGATTAATATGATGAAAACGGCAACCCGTGGTCGGCTTACGGCGGTGATTTTGGCGATACGCCGAACGAT
CGCCAGTTCTGTATGAACGGTCTGGTCTTTGCCGACCGCACGCCGCATCCAGCGCTGACGGAAGCAAAACACCAGCAG
CAGTTTTTCCAGTTCCGTTTATCCGGGCAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAACGAGC
TCCTGCACTGGATGGTGGCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAAGTGCCTCTGGATGTGCTCCACAAGGTA
AACAGTTGATTGAACTGCCTGAACTACCGCAGCCGGAGAGCGCCGGGCAACTCTGGCTCACAGTACGCGTAGTGCAAC
CGAACGCGACCGCATGGTCAGAAGCCGGGCACATCAGCGCCTGGCAGCAGTGGCGTCTGGCGGAAAACCTCAGTGTGA
CGCTCCCCGCCGCTCCACGCCATCCCGCATCTGACCACAGCGAAATGGATTTTGCATCGAGCTGGGTAATAAGCG
TTGGCAATTTAACCGCCAGTCAGGCTTTCTTTCACAGATGTGGATTGGCGATAAAAAACAACCTGCTGACGCCGCTGCCG
GATCAGTTCACCCGTGCACCGCTGGATAACGACATTGGCGTAAGTGAAGCGACCCGATTGACCCTAACGCCTGGGTC
GAACGCTGGAAGGCGGCGGGCCATTACCAGGCCGAAGCAGCGTTGTTGCAGTGCACGGCAGATACACTTGCTGATGCG
GTGCTGATTACGACCGCTCACGCGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGGAACCTACCGGATTGAT
GGTAGTGGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACACCGCATCCGGCGCGGATTGGCCTGAAC
TGCCAGCTGGCGCAGGTAGCAGAGCGGGTAACTGGCTCGGATTAGGGCCGCAAGAAAACCTATCCCGACCGCCTTACT
GCCGCTGTTTTGACCGCTGGGATCTGCCATTGTGACACATGTATACCCCGTACGTCTTCCCGAGCGAAAACGGTCTGC
GCTGCGGGACGCGCGAATTGAATTATGGCCACACCAGTGGCGCGGCGACTTCCAGTTCAACATCAGCCGCTACAGTC
AACAGCAACTGATGGAACACAGCCATCGCCATCTGCTGCACGCGGAAGAAGGCACATGGCTGAATATCGACGGTTTCC
ATATGGGGATTGGTGCGCAGCACTCCTGGAGCCCGTCAGTATCGGCGGAATTCCAGTGAAGCGCGGTCGCTACCATTA
CCAGTTGGTCTGGTGTGAGGGGATCCCCGGGCTGCAGCCAATATGGGATCGGCCATTGAACAAGATTGATTGCACGC
AGGTTCTCCGGCCGTTGGGTGGAGAGGCTATTCCGGCTATGACTGGGCACAACAGACAATCGGCTGCTCTGATGCCGCC
GTGTTCCGGCTGTCAGCGCAGGGGCGCCCGGTTCTTTTTGTCAAGACCGACCTGTCCGGTGCCCTGAATGAACTGCAGG
ACGAGGCAGCGCGGCTATCGTGGCTGGCCACGACGGGCGTTTCTTGCGCAGCTGTGCTCGACGTTGTCACTGAAGCGG
GAAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCCTGTATCTCACCTTGCTCCTGCCGAGAAAGTATC
CATCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTCGACCACCAAGCGAAACATCGC
ATCGAGCGAGCACGTACTCGGATGGAAGCCGGTCTTGTGATCAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCG
CCAGCCGAATGTTTCGCCAGGCTCAAGGCGCGCATGCCGACGGCGAGGATCTCGTCGTGACCCATGGCGATGCCTGC
TTGCCGAATATCATGGTGGAATGGCCGCTTTTCTGGATTATCGACTGTGGCCGGCTGGGTGTGGCGGACCGCTATC
AGGACATAGCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCTTCTCTGTGCTTTACGG
TATCGCCGCTCCCGATTTCGACGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGGGGATCAATTCTCTAGAG
CTCGCTGATCAGCCTCGACTGTGCCTTCTAGTTGCCAGCCATCTGTTGTTTGCCCTCCCCCGTGCCTTCTTGACCCTGG
AAGGTGCCACTCCCCTGTCTTTTCTAATAAAATGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTCAATTCTATTCTG
GGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTC
TATGGCTTCTGAGACGGAAGAACCAGCTGGGGCTCGATCCTCTAGAGTCGAGTACCGGGTAGGGGAGGCGTTTTCC
CAAGGCAGTCTGGAGCATGCGCTTTAGCAGCCCCGCTGGGCACTTGGCGCTACACAAGTGGCCTCTGGCCTCGCACAC
ATTCCACATCCACCGGTAGGCGCCAACCGGCTCCGTTCTTTGGTGGCCCTTCGCGCCACCTTCTACTCTCCCCTAGTC
AGGAAGTTCCCCCCCCGCCCGCAGCTCGCGTCGTGCAGGACGTGACAAATGGAAGTAGCACGTCTCACTAGTCTCGTG
CAGATGGACAGCACCGCTGAGCAATGGAAGCGGGTAGGCCTTTGGGGCAGCGGCCAATAGCAGCTTTGGCTCCTTCGC
TTTCTGGGCTCAGAGGCTGGGAAGGGGTGGGTCCGGGGGCGGGCTCAGGGGCGGGCTCAGGGGCGGGGCGGGCGCCC
GAAGGTCTCCGGAAGCCCGGCATTCTGCACGCTTCAAAAGCGCACGTCTGCCGCGCTGTTCTCCTCTTCTCATCTCCG
GGCCTTTCGACCTGCACTGCGCGCCAGCTTACCATGACCGAGTACAAGCCCACGGTGCGCCTCGCCACCCGCGACGAC
GTCCCCAGGGCCGTACGCACCTCGCCGCGCGTTTCGCCGACTACCCCGCCACGCGCCACACCGTCGATCCAGACCGCC
ACATCGAGCGGGTCACCGAGCTGCAAGAACTCTTCTCACGCGCGTCGGGCTCGACATCGGCAAGGTGTGGGTGCGCG

Targeted Locus:

[illegible]

GTAGCTGTCCTGGAACCTCACTCTGTAGATCAGGCAGGCCTCGAACTCAGAAATCCACCTGCCTATGCCTCCCAAGTGCT
GGGATTAAAGGTGTGTGCCACCACTGCCCAGCTTGTGTTTTGTTTTTCAAGCCAGTATTTCTTTGCATAGCCCTGGCTGTC
CTAGAACTCACTCTGTAGGCCAGGCTGGCCCTTGAACCTCACAGAGATCTGCCTGCCTCTGTCTCCAAAGGGATGGGATT
AAAGGTGTGCACCAGCACTGCCCAGCTTTGAACTGTCTATCTAGCCGAGAAAGGCATTGAACTCCCGGTCTCTGCCC
TACCTCTGGAGTGCTGGAATGACAGGTGTGCACCATCACATCTCACTCTTGTTTCATGTCTTGAGCCTTGGCTTCCTGCCT
TGGGTGCTCTGAGGAGTCAGTATCCATGGAAGTCATTGTTGGTCAATGGTCATCTGTTCTCCACTCTTGAGGATCCAT
ACAGAGGCCAGTGGCCCTGTGTTGAGATTCTAGCCCTGCTGCTTGCCAGTGGCCAGTGTGGGGAAAATTGTCCCCTTCT
GCTTGGCATAAGCATCAATAGAAAGATAGACAGTGTCCATAAATGGCTGTAGCCATTCTCATAGAGGCTGAACATTGCTT
GGGAGGTATGGGGGGATGGTGGTGTCTGGTCTGGAATAGGAAAAACACCATGCTGCCCTTCAGGAGAGTCTTCAGATGG
TGCCAAGTGTGTCTCTGGACATGATTACTTATATCATCAGGGCAAGAACATGACTCAAACCTTCAGCACTGTATCCCTAG
GGATGTCTATATAAACACACAGTAGAGCCACCGCCCTAGTTTCAAGAGGAACAGAGACTGTGACTCTAAGTGGCTTGTG
AGGAAACTTCCAGAAGGATCTCTTAAACAAACAGAGGCGTGGGAATCAGGCACTGGAAATGGGGAGATTGCTCTGCA
CCACAGGGATGCATTTCTACCTTAGTGACTCCACCCACCTTGCTGGGCTCCTAGCAACATCACCAGCACCAGTTCTGCA
GGCAGACAGCAGGAGACTGAGTCATGTAAGTTAGGGGCCTCACAGGCCCTAGCTCACTGGCATCCTAAACACTGGCCT
TCAGGAAGGTAACCTCTGAGCTCTGGCTAGCACTGCACTCCAGAGTCTCCATCTAAATGACTGACAGCCAGCACAGCTC
AGAGGAAAGCAGCCTAAAGGGACACAGGATAAGGAGCAGAGGAGGCAAAGCCCTTTGTCCATCCGGCTAGTGGATCC
TTATTTCTCCTCCTGACCTTTCTCATGGCCGTGGGATGGCACCCCTGCACAACCTCGACTGGGCATTGGCTCTCATACCT
GGCCTGCCCTTGGTGCCCTTGGGAAGCCAGCATGAAACGAGCCCATCAGCAGAGCACATCGCCATGGGGATGGGAGCC
CTTAGTGGTGAACCTCAGGGATAACTGACTGTGAGTTTTACAGACCCGGGGTTCCTGTGGTTGGCTTGCCTTCATTCTC
TGTGGGCCCAGCCTCCTCCAGTTGAGGGCAAGACACCACATTCTCAAAGAAGCTCTGCAGCAATGTCTCTTGCATTTT
CTAGATGGAGACACTGGGTCAAAGGTTATTTCCACTACACCCAAGGGATCTTCCCAACCGATTTTGTAGGTATGATTT
AAAATAAAATATACCTCTCACAAGTTTCCATTTTCCAAGCTGAGAAGAGTCTGGAGACACTTGGTGACACATACTTC
CACCATGACATGAGTATGGTGGCCCTGAAACACCCGGAAAACAGTTTGTGGGCACATTCTATGTAGTGTGTCTCGACA
ATGGGGAAAAAAGAAAAAGAAAAATATACATATATAGCAGGTTCAAATTAATGCATCTTTAAATTCGAA
CACGGCTCGCTCTGTAAAAATTTAGAAATTACACAAATTCACCCCCCAACCTGATTTGAAGGGCACAGTTACTTATG
TGCTGTATGCCATGCCATAGTGCATATTCAGAGGTCAGAAAGAGAACCTGTGGGGGTCAGTTCTCTCCTCCCATTCCT
TGGGGAGTGAGCTCCGTCTTCATCAAGCACCTGTATCTTTTAAAGTCATCTTGCCAACCTCTCAGAGCGTTAAACAAATGT
TACTCCCACACTCATGATATGGGACATTTTGGTACCTATAGCCACACTCTTCCCCTCTTCCCCTTTGGCTGTGGCCTGG
CCTTCTGACTCTTTTCTAAGTTTGACACTGATGGCTCAGACCTGTATCCAGCACATGATAAGCGGAGGCAGGAAGG
AGGATTGCCTTGAGATCACAGCCAGCCTGGCTGGGTCTCATGGTGACTTCCAGAACAATAACAACCACCAAGCAAAAT
AGAAACCAAAAACCAAAATCAGGACGTGAGAAGGGGGGTCGGGGCAGTTCTCAGCAGTTAAGAAGTTTGTGTTGCACTG
GGCAATGGTGGTACTCTCCTTTAACCCAGCACTTGGGAGGCAGAGGCAGGAAGATTTCTGAGTTCGAGGCCAGCCTG
GTCTACAGAGTGAGTTCCAGGACAGCCAAGGCTACACAGAGAAACCCTGTCTCAAAAAACAAAAACAAAAACAAAA
CAAACAAACAAACAAACAAAAAACCACAAAGAGTTTATTTGCCTGTTTTTAATTTTAAAGAGATTTATTTTCATG
TATGTAAGTATATATGACGAGTACACTGTAGCTGTCTTCAGACACACAGAGGACTTCAGATCCCATTACAGATGG
TTGTGAGCCATCATGTGGTTGCTGGGAATTGAATCAGGACCTCTGGAAGAGCAGCCAGTGTTCTTAACACTACCGAGCCA
TCTCTTAGCCCCAGTTAAGAAGTTTACCGTTCTCCAGAGGGCCTTAATTCATTTCCAGCACCCACATCGGGGCAGCT
CACACCCAGCTCCAGGGGTTTCATCACACCTCTGGCATCTCTGTCTTCATTTCATCAGCATATCCCACACACACAGATAGA
CCCACATATACCCCCCCCCCGCCCCCATGTATGGAACCTTTCAAAGAATAAAAAGTTTTGTGGCCTTTTGTGTTTTGTTTTG
TTTTGTTTTGTTTTCAATCAAACAAAAAAGCCCCATAACCAAGCCCTTCTGGCCATCTGTCCAGCATGGGCCCCGAGAAAA
CAGCAGAGGCCACAGGAGTTCTGCCACTGCTCCCCCCCCATACCACACAGTCCCTGAGATGACAGATTAGAAACCCAG
TCTCAGCACACACAGGGCTCTGGAGATTCTGGGGACTAGATCTGCATCCAGAGGCCGCAGAAAGCAGCAGGCACCT
TCTCTTTCATCAAGAGAGTCTATAAAGTAACAACAGCGCCCCCTGCTTGCAAAAAATCGCTTTCCCTTTTCTTTCTTTCTT
TCTT
AATTTTCTCCCGGGGAGGGGGGGATATCCCCAAAACCTAGGAGTGGTGATCAGAATTTCTGGGCACGCCCACCTCAC
ACCCTGCGATTCTGTTCCACATTGCTGTAATTATAAAAAGCCACTTAATAGACTCTCGCTCTCCGTGTGAAAAGCACAG
GCTCTTCTATACACAGAGAGATCTTAGGACTCCTATGTCTACTCTTCCAAACAACAAGTTAAGCCCCAAAAGCAGGCT
GATGTAACCTGGCAAGAGTTCACCATGTGCCAGGGAGTAGCCATCTGTGGATCCACTGTCACTCCTGTGCTCTGAGACA
GGCCATCCTGCCTTTGTACAAACAAGGCTCCATCTTCACCTCTTACGATGTGCATCCTTGGGGGCGCTCTGTCACTTTC
CAGAGTCCCATTTTCTACCTTGTTTCAGAGGTGGAAGTAAACCCGCCCTGGAGAAGAATGTTCTTATGGCGGCCCCCAG
TGACCCAACAGACTTTCTCTGATCACTCCATTACCAACATCTCTAACTCTTCTGGGAGTCCCTGAGAAGGGGCGCAGAG
TGGGGATGGGGTGTGCCACCCGATGCCACCCTCCAGCCCAATTTGGGGGGACTCCTCAGTAAAGCCTCTGCCAACCT
CCCTGGTACCCACATTTATCACGGACATTAACCAAAAAGCGTCAGGAGAAGGCAATTAAGATTAATAGCCCGCGCTG
TCGATTGAGAATCACAAGGGAGAAGTAATTAGATTTTACAGGAGACATCGCTCTCTAAACAAGCCTCACAGCATGGG
AGTCCCCGGTCTGAGAGCCTTCGGTGATGTCTTTTTGTAAAGGCTTTCCTGATGACATTCTCCAGAGCTCCGTCATTA
ATGCCAGTCACTGATGGCGTCTGAAAGTGGCGTGTTCCTCATTGAGATTTCATCAGATCTGCCATTTCTCTGTGTCCCGC
CCCTGCAGACAGACCTCCCATCACCACGGAGCTAGGCCAGTACCTTTTTACCCAACAGCCTCCTGGGGCCCCACATA
CAGGAGTTGGGGGGTGGAGGCATAATGAGAAAGGATAAGCGCTGAGCCAAAGCCCCCTGCGAGGACCCTTTCTTTCA
GGAAGGGGAATTCTCTGCAGGCTGCCTCCTTTCTTTGCAAGAGCGGCTCTAGGAGAAGCCCCCATTTCTCTCCACCT

GACCGGCCGCCAGCAGCGTCCACCGTTGCTCCTAGCTGGCCCCCTCCTCTCCGGTACGCAGCTGTCCCCCGCGCACAGA
CTCAAGGGCCTGATCATCGACCCAAGAGGGGATCCCGCGGCCTGCCGTGCTTCTGCACGCTGGTCAGTCCACCCTTCTC
AAAAGTCGCAGCCCCAGTGACGTTCCACTTGTGGAGTCCACGCGGAGGCAGGCAGAGGACGTGCAGACAGCGACTG
GCAGCACATTGGAGACCGAAACTAGGGCTGAAGCGCCACCTAGTGCCTGCGACACGTTCTCACGAGGTCTCCACCTTG
TAGGGCAAATATCCATGAAAAGGGAGCCTAGGTCTGGGGCCGGGAGAATGAGGGAGGGTAGGATCTGCGATAGCGTG
CTAAAGGAGAGATTCAAGACTCAAACAGGGGGCTACGGAGGCAGAGCTCTGCGTGCCCTTCTAGTCTCTGTGACTGTCC
CACGCGCATCCCTCTGAAAGCCCAGGGCCTGAAGACCTCAATAATTAATAGTAAAATTAATAAGCCTATTCAATAACC
ACCAAGATACTGTGCATTGAACACTTGCTCCCCAGGCCAGGGTCGCAAAGGGGGGGCTCCTCCTCTGCCAGATCTGGCC
GGCCTGGGCGGGTCACTGGGTGGGGCTTGAATGGGTGTGTGCGGGGGGCGGAGACTTGATGCAATTAGGAGGAGAA
ATGCTCTGATGCCCCGGTCACTACCCGCGGGGCCGCGGACGAAACGTATATAAGGCCGCGTGCCCGGAGCCACCC
CACTGTCGGAGCAGTAACCTCTGTGCGCCCCACGCCACAAGCGCCAGTTGCTTTGTGGGTTGTGCCTGCCCTGCGCTG
CAACTTGAGTCCCCCGCATCGCAGTCTCCGCGCCACCTTTGTAAACGCGGCTTCAGGACCCCGAGGTGTCTATGGCCGCT
CTAGAGGCCATAGCGGCCATTTAAATGGCGCGCCGGATCCGAATTCCTCGAGGCTAGAACTAGCGATAAGCTTCGAGC
GGGATCAATTCGCCCCCCCCCTAACGTTACTGGCCGAAGCCGCTTGAATAAGGCCGGTGTGCGTTTGTCTATATGTT
ATTTTCCACCATATTGCCGTCTTTTGGCAATGTGAGGGCCCGGAAACCTGGCCCTGTCTTCTTGACGAGCATTCCTAGGG
GTCTTTCCCCTCTCGCCAAAGGAATGCAAGGTCTGTTGAATGTCGTGAAGGAAGCAGTTCCTCTGGAAGCTTCTTGAAG
ACAAACAACGTCTGTAGCGACCTTTTGCAGGCAGCGGAACCCCCACCTGGCGACAGGTGCCTCTGCGGCCAAAAGCC
ACGTGTATAAGATACACCTGCAAAGGCGGCACAACCCCACTGCCACGTTGTGAGTTGGATAGTTGTGGAAGAGTCAA
ATGGCTCTCCTCAAGCGTATTCAACAAAGGGGCTGAAGGATGCCCAGAAGGTACCCATTGTATGGGATCTGATCTGG
GGCCTCGGTGCACATGCTTTACATGTGTTTAGTCGAGGTTAAAAAACGTCTAGGCCCCCGAACCACGGGGACGTGGTT
TTCCTTTGAAAAACACGATAATACCATGGGGGATCCCGTCGTTTACAACGTCGTGACTGGGAAAACCTGGCGTTACC
CAACTTAATCGCCTTGACGACATCCCCCTTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTTCCC
AACAGTTGCGCAGCCTGAATGGCGAATGGCGCTTTGCCTGTTTCCGGCACCAGAAGCGGTGCCGGAAGCTGGCTGG
AGTGCGATCTTCTGAGGCCGATACTGTCGTCGTCCCTCAAACCTGGCAGATGCACGGTTACGATGCGCCCATCTACAC
CAACGTAACCTATCCCATTACGGTCAATCCGCCGTTTGTTCACGAGAAATCCGACGGGTGTTACTCGCTCACATTTA
ATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGCGAATTATTTTATGATGGCGTTAACTCGGCGTTTCATCTGTGGTG
CAACGGGCGCTGGGTGCGTTACGGCCAGGACAGTCGTTTGCCGTCTGAATTTGACCTGAGCGCATTTTTACGCGCCGGA
GAAAACCGCCTCGCGGTGATGGTGCTGCGTTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGC
GGCATTTTCCGTGACGTCTCGTTGCTGCATAAACCGACTACACAAATCAGCGATTTCCATGTTGCCACTCGCTTTAATGA
TGATTTACGCCGCGCTGTACTGGAGGCTGAAGTTCAGATGTGCGGCGAGTTGCGTGACTACCTACGGGTAACAGTTTCT
TTATGGCAGGGTGAAACGCAGGTCGCCAGCGGCACCGCGCCTTTCCGGCGGTGAAATTATCGATGAGCGTGTTGTTAT
GCCGATCGCGTCACACTACGTCTGAACGTCGAAAACCCGAAACTGTGGAGCGCCGAAATCCCGAATCTCTATCGTGCG
GTGGTTGAACTGCACACCGCCGACGGCACGCTGATTGAAGCAGAAGCCTGCGATGTCGGTTTCCGCGAGGTGCGGATT
GAAAATGGTCTGCTGCTGCTGAACGGCAAGCCGTTGCTGATTTCGAGGCGTTAACCGTACAGGACATCATCCTCTGCATG
GTCAGGTATCGATGAGCAGACGATGGTGCAGGATATCCTGCTGATGAAGCAGAACAACCTTAACGCCGTGCGCTGTT
CGCATTATCCGAACCATCCGCTGTGGTACAGCTGTGCGACCGCTACCGCCTGTATGTGGTGGATGAAGCCAATATTGA
AACCACGGCATGGTGCCAATGAATCGTCTGACCGATGATCCGCGCTGGCTACCGGCGATGAGCGAACGCGTAACCGG
AATGGTGACGCGGATCGTAATCACCCGAGTGTGATCATCTGGTCGCTGGGGAATGAATCAGGCCACGGCGCTAATCA
CGACGCGCTGTATCGCTGGATCAAATCTGTCGATCCTTCCCGCCCGGTGCAGTATGAAGGCGGCGGAGCCGACACCAC
GGCCACCGATATTATTTGCCCGATGTACGCGCGCGTGGATGAAGACCAGCCCTTCCCGGCTGTGCCGAAATGGTCCATC
AAAAAATGGCTTTTCGCTACCTGGAGAGACGCGCCCGCTGATCCTTTGCGAATACGCCACGCGATGGGTAACAGTCTTG
GCGGTTTCGCTAAATACTGGCAGGCGTTTCGTCAGTATCCCCGTTTACAGGGCGGCTTCGTCTGGGACTGGGTGGATCA
GTCGCTGATTAAATATGATGAAAACGGCAACCCGTGGTCGGCTTACGGCGGTGATTTTGGCGATACGCCGAACGATCG
CCAGTTCTGTATGAACGGTCTGGTCTTTGCCGACCGCACGCCGCATCCAGCGCTGACGGAAGCAAAACACCAGCAGCA
GTTTTTCCAGTTCCGTTTATCCGGGCAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAACGAGCTC
CTGCACTGGATGGTGGCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAAGTGCCTCTGGATGTCGCTCCACAAGGTAAA
CAGTTGATTGAACTGCCTGAACTACCGCAGCCGAGAGCGCCGGGCAACTCTGGCTCACAGTACGCGTAGTGCAACCG
AACGCGACCGCATGGTCAGAAGCCGGGCACATCAGCGCCTGGCAGCAGTGGCGTCTGGCGGAAAACCTCAGTGTGACG
CTCCCCGCCGCTCCCACGCCATCCCGCATCTGACCACAGCGAAATGGATTTTGCATCGAGCTGGGTAATAAGCGTT
GGCAATTTAACCGCCAGTCAGGCTTTCTTTCACAGATGTGGATTGGCGATAAAAAACAACCTGCTGACGCCGCTGCGCGA
TCAGTTCACCCGTGCACCGCTGGATAACGACATTGGCGTAAGTGAAGCGACCCGCATTGACCCTAACGCCTGGGTGCA
ACGCTGGAAGGCGGCGGGCCATTACCAGGCCGAAGCAGCGTTGTTGAGTGACGGCAGATACACTTGCTGATGCGGT
GCTGATTACGACCGCTCACGCGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGGAACCTACCGGATTGATGG
TAGTGGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACACCGCATCCGGCGCGGATTGGCCTGAACTG
CCAGCTGGCGCAGGTAGCAGAGCGGGTAAACTGGCTCGGATTAGGGCCGCAAGAAAACCTATCCCGACCGCCTTACTGC
CGCTGTTTTGACCGCTGGGATCTGCCATTGTCAGACATGTATACCCCGTACGTCTTCCCGAGCGAAAACGGTCTGCGC
TGCGGGACGCGCAATTGAATTATGGCCACACCAAGTGGCGCGGCGACTTCCAGTTCAACATCAGCCGCTACAGTCAA
CAGCAACTGATGAAACACGACCATCGCCATCTGCTGCACGCGGAAGAAGGCACATGGCTGAATATCGACGGTTTCCAT
ATGGGGATTGGTGGCGACGACTCCTGGAGCCCGTCAGTATCGGCGGAATTCCAGCTGAGCGCCGGTGCCTACCATAC

CAGTTGGTCTGGTGTTCAGGGGATCCCCGGGCTGCAGCCAATATGGGATCGGCCATTGAACAAGATGGATTGCACGCA
GGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTCGGCTATGACTGGGCACAACAGACAATCGGCTGCTCTGATGCCGCCG
TGTTCCGGCTGTCAGCGCAGGGGCGCCCGTTCTTTTGTCAAGACCGACCTGTCCGGTGCCCTGAATGAACTGCAGGA
CGAGGCAGCGCGGCTATCGTGGCTGGCCACGACGGGCGTTCCTTGCAGCTGTGCTCGACGTTGTCACTGAAGCGGG
AAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCCTGTCTATCTCACCTTGCTCCTGCCGAGAAAGTATCC
ATCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTCGACCACCAAGCGAAACATCGCA
TCGAGCGAGCACGTACTCGGATGGAAGCCGGTCTTGTGATCAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCGC
CAGCCGAACCTGTTCCGCAAGGCTCAAGGCGCGCATGCCGACGGCGAGGATCTCGTCGTGACCCATGGCGATGCCTGCT
TGCCGAATATCATGGTGGAAAATGGCCGCTTTTCTGGATTATCGACTGTGGCCGGCTGGGTGTGGCGGACCGCTATCA
GGACATAGCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGCGAATGGGCTGACCGCTTCTCTGCTGCTTTACGGT
ATCGCCGCTCCCGATTTCGACGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGGGGATCAATTCTCTAGAGC
TCGCTGATCAGCCTCGACTGTGCCTTCTAGTTGCCAGCCATCTGTTGTTTGGCCCTCCCCCTGCCCTTCTTGACCTGG
AAGGTGCCACTCCCACTGTCTTTTCTAATAAAAATGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTCAATTCTATTCTG
GGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTC
TATGGCTTCTGAGACGGAAGAACCAGCTGGGGCTCGATCCTCTAGAGTCGAGTACCGGGTAGGGGAGGCGCTTTTCC
CAAGGCAGTCTGGAGCATGCGCTTTAGCAGCCCCGCTGGGCATTGGCGCTACACAAGTGGCCTCTGGCCTCGCACAC
ATTCCACATCCACCGGTAGGCGCCAACCGGCTCCGTTCTTTGGTGGCCCTTCGCGCCACCTTCTACTCCTCCCCTAGTC
AGGAAGTTCCCCCGCCCCGAGCTCGCGTCGTGCAGGACGTGACAAATGGAAGTAGCACGTCTCACTAGTCTCGTG
CAGATGGACAGCACCGCTGAGCAATGGAAGCGGGTAGGCCTTTGGGGCAGCGCCAATAGCAGCTTTGGCTCCTTCGC
TTTCTGGGCTCAGAGGCTGGGAAGGGGTGGGTCCGGGGGCGGGCTCAGGGGCGGGCTCAGGGGCGGGGCGGGCGCCC
GAAGGTCTCCGAAGCCCGGCATTCTGCACGCTTCAAAAGCGCACGTCTGCCGCGCTGTTCTCCTCTTCCTCATCTCCG
GGCCTTTCGACCTGCACTGCGCGCCAGCTTACCATGACCGAGTACAAGCCCACGGTGCGCCTCGCCACCCGCGACGAC
GTCCCCAGGGCCGTACGCACCCTCGCCGCGCGTTCGCCGACTACCCCGCCACGCGCCACACCGTCGATCCAGACCGCC
ACATCGAGCGGGTCACCGAGCTGCAAGAACTCTTCTCACGCGCGTCGGGCTCGACATCGGCAAGGTGTGGGTGCGCG
ACGACGGCGCAGCAGTGGCGGTCTGGACCACGCCGAGAGCGTCGAAGCGGGGGCGGTGTTCCGCCGAGATCGGCCCG
CGCATGGCCGAGTTGAGCGGTTCCCGGCTGGCCGCGCAGCAACAGATGGAAGGCCTCCTGGCGCCGCACCCGGCCCAAG
GAGCCCGCGTGTTCTTGGCCACCGTCGGCGTCTCGCCCCGACCACCAGGGCAAGGGTCTGGGCAGCGCCGTCTGTGCTC
CCCGGAGTGAGGCGGCGGAGCGCGCCGGGTGCCCGCCTTCTGGAGACCTCCGCGCCCCGCAACCTCCCCTTCTAC
GAGCGGCTCGGCTTACCGTACCGCCGACGTGAGGTGCCGAAGGACCGCGCACTTGGTGCATGACCCGCAAGCCC
GGTGCCTGACGCCCCGCCCCACGACCCGCGAGCGCCCGACCGAAAGGAGCGCACGACCCCATGCATCGATGATCTAGAGC
TCGCTGATCAGCCTCGACTGTGCCTTCTAGTTGCCAGCCATCTGTTGTTTGGCCCTCCCCCTGCCCTTCTTGACCTGG
AAGGTGCCACTCCCACTGTCTTTTCTAATAAAAATGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTCAATTCTATTCTG
GGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTC
TATGGCTTCTGAGGCGGAAGAACCAGCTGATTACCCTGTTATCCCTACTCGACCTCGAGGGCGCGCCATTTAATGGCC
AGCGAGGCCGGTACCCAATTGCCCCATAGTTTCGAGGGCAAGGTACCAATGATAGTGGGGCTAATATTGCTCTTTGCCG
CCCTGCGTAAAGTATGAGCCCCAGGCTGTAGCGGGGAGCAGGGAGACCAGAGAAGCTGTCTAATCTTCCCAAAGACT
GGGCTAACTGCTGAGTCCCATTCAGCTTTCGGCCCTTTGATACTGAACAGGAAAGCCTCCTCTCTGCGTTTTCGCTGTT
CGTGGTCTCTGATTTCTTCCCCCTCCCTCAAATAAAAAAGAAAAG:AAAAGGAAAGAAGGGTCTTTTCAATCAATTTTTT
TTAGGTCCATGGTGTGATGCAAAAATTAGATACTTTAGAAAAGTACCCAAGATGCTCATCTGCTTGTGACCTGGGGGAAC
TGGAGTGAGGCGAGATGGCTAGGTTACATAACCCCTAAAAATCGGTAGTCATGAAGTATGTAGGCTAGTGCTCTGTA
GGAATAGAGGCTGGGTTCAAAGAAGCCTTCAGCCCTACCTCTGGCAGTACCAGTGCAGAGTCCCCAGTGGGGAAGGA
TGGCTACCGGACTTAACGTTTTTGTGTTTTGTTTCTTTAAGAGTCCCCAAATTGTCTGTGGCTCTGAAGTTGATTTATCT
ACATGAAAAGACCACAGAGAAASSAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAAAGAA
GAAAGGGGTCTGCAGAGAAAGGAAGGGGCTTCAGAGGAGGGGTCCCTGCTGGCTGAAAGCTGACACCCAGGCCC
AAGCAAATCTCCTGCCTGTATCTTCTGAAGTCTTTATTTGTGCTGGGCAAGGAGTCCGACCTCCATTCTGCACTAATGT
AAATAGTGTAGGAAGGCCCCATGGGAGCTTTGCCCCCAATTCTAGTGCCACCCTGGATCTGGTGGGCATAATTCATTT
CAGACTCTCCTTTTTTAAAAATAGAAGCCCCATAATCCATTGTTTCTATATGGAAAAAAAAGAGTGACCAGTTGTCCAT
ATGAATTCTCCAGGAGAAATACATCCTGTGTTTATCTACAGTTCACATTTTTTTTTTTCAGGGAACATGGCCCCCTCCTGCCTG
GTGGCTCTGTCTCAGTGCCATCAGCCAGGGCAGGAGCAATTGGTTCTGGAATTAGCCTGTTATCAGAGCCTTATCTGC
CAACTGTCTTCTACCTGCAGTTCAATGACCTCTGCATGCTTAGGCAGACACAGCCTGTGCTTATTGAGCCATGTAGGCTC
CCCAAGGGAATATGGCACCAGTCTGGGAGACTACCACTGGTACCTCAAGCCTGGGGACTAGGAATATTCTGGTACTTA
GGATTAGGGACAGCTTCCCACTGCATTCAATTTCCGGCCACCCACAGAGTGTGGGCTTGGTCCCTGGCATGGTGGGCGGG
AGGAGTTGCGGATTATCCGGCAGATCCAGGACAGCTGCCGGCAGATCCAGGGGGCTTCTCTTCTCACAATGGTAGGAG
ACTCAACCACCTAAGCATTAGAAAAGCTTCTGAGCTGCAGGTCTAGACAGAAAGGATCCCTTTATCCCTGGTCCCAGG
CGAGGCTGCAGTTACTACCCAGAAAATGTAATCTAACCAGGAGCAGGGTTTTTGAAAGTTGATAATGATCAGATTTCA
ATGTCACTAGTTAAAAACCAGGAAGATTTGCACACTGCCAGCTTCTGCGTGGATATCCAGTTGGGGTGGATAATTGGAA
AATTCCAATCTTCTGGAAGCGAAGGCAGGAGGAGTGCTGAGAGGTAAAGGCCTCAGAGTTAGAGCCTGTCTCAAAAAA
CATGACATGGCTGGGAAACTGAGCTAGTGAGTGTTTGCCTAGCACACTCAAAGCCCTGGGTTCAACTGAGCACTGC
ATAAACCCAGCTCAGTGGGGCTCCTTGTATCCCAGCTCTTGGGAAGTGAGGCAGAAGGATCAGGAGTTCAAAGTCA

ACATGGTCCCGGAGGTATTTGTTTCAAAATGAAAATCCAGGCCTAACATGGTTATAGATGCCTTTAATCCCTGCATTTG
GTGACAGAAGCAGGTGGATCTTTGAGTTCTAGGCCAGCCAGGGCTACATATGGTAAGAATCTGTCTCAAGAGAAAGTT
GCTGGATACTTCTGGGATGAGCCAACAATCTCATGTAGCCCCAGCTGCTCTTCAACTCTGGATTTCTTGCCTCCACCTCT
CAAGGAGTGGGATGGTAGTTCGAGCTCAGCCATGCCTTGATTTCTGTGTGCTTAAAGGCGGTTGATAGAAGAAGCACTCT
GCTGGTTACCGCTGGGACGGTCCACGGTGGTGCTTGCTCATGCACACAGCCTCTTGTCTCTTTCTCCAAAGATTTCGCTAC
TCGGAGGAAGACTGTACCTTCAGGGAGGAAATGGACTGTTTAGGCTACAACCAGTACAGATCCATGAAGCACCATCTC
CATATCATCTTCATCCAGGCCAAGCCCAGAGAACAGCTCCAGGACCAGAAACCCTCAAACCTTTATCCCCGTGTTTCACC
GCTCCTTCTTTGAAACCGGGGACCAGCTGAGGTCTAAAATGTTCTCCCTGCCCCCTGGAGAGTGACAGCATGGATCCGTT
CAGGATGGTGGAGGATGTAGACCACCTAGTGAAGAGTCCCAGCTTCCAGAAATGACAGGATTCCGACAGGATGGAGA
AAACCCCAAGGTCCCGTGAACCTTCCCCCTTAGGAAGCTGTACATATTCTAAGTCTCACATGGACCCTGTGTGTAGTG
GCTAGACTTGTATCATGAACCTAAGTTGACAACCTGGCTGCCATCGGAGCCCCACTGACTTTGGAGGCTGCTGATA
TGTGCTTAAGTTACTCCAGTTCTGTTTGAATACCTCCACTAATAGGGAACCTTACTCCTGTGAAACATTCTTAGTTTTGAG
CCAAATCTGTGACTTGGATGGTTTTAGCGAGGAAGCCAGAAGGTATGAAGTCAAATGATAAAATTCATGTATAGAAAG
TGGGCTCTAAAATATATATTCCCTATATGGATCTCATGGGATCTTAGCTTGCCCCCAAATGTCTCCTGGCCAGAACTAA
CTGGGGTTACAAACTTGGAAACAAAGGACAGCCTAGAAAACCTTTGGGAGCCTTGAAGGATGGTCTTAGGATTACGAATT
CCAGCTGACTACGTAGCTTCCCCCTTTTCCACTTATAAATGTCAGATGGAAGTGACCCTTAGCTGAGTGCATAGCCAAG
CTGCCACTTATGCCCCAGGAGCTTGTCTCTGTCCCATGACCCCAGATTTCCAGGACCTGGATCTGCTCCTCTGACCTTTC
CCAGAGTTCACCTGGGCTCTCCAACCCCAGAGCAGGTAGCTTATGAGCCATCCAGTTGTGTCCCCAGCTCCTGGCTCTC
AGTTCTGGTCAACAAACATTGTGAATCAACGTGTCTGCTGCCTGTGTCAACCTGGATCCCTCATTTACAAACAAGATTA
GGAAGCCCCAAATTCTCCAGTGGCAGCTGGGGAACCTGTGGAGTCCCTTTCCCCGGCACTTACGTGGCAGCATGATATTTA
TAAGTAATTTATTGTGTGTGTGTCTTCTATTTTCTTACTTTATTTATGCCCCAGATCATATTTATGTACATGACTTGTTTTC
TACATTAAAAAGGAGTTGGTTTGTATCAAAAGTTATTTGTTCTATTCCAAGTGGGGTTTCCAGAGGAGGCACAGGTGGGAG
GGTCACATGACTGTTAGGGGCTTACAGGGGGGCTGGTGCCTTTGTTGACAATGGGTGGCTCCCTTTCTGACTGCTAGG
ACCCCTCATACCCAACCTCCAAATGAGGCTAGGAGGATACCATAGCTTAAAGTCAGAAAGCCCCACTGGCTTTTGCCAGT
TTGGGACATGCTAGCTGATGGGAGTGTGAGTGCAGAAGAGCTTATTGGAAATTCACACATACATACACACTCACACAC
ACACACACACACACACACACACACACACTCACTCACCTTCTCTGGGTCTTACTAGGACAAAGCTTCTCTATTAT
ACAGCTCTGGCTATCCTGGAACCTTAAAGTAGACCAARCTGGCCTTGAACCTCAGAGATCTGTCTGCCTTTGACTCCTTAGT
GCTGGGATTAACAGCATGCACCACCAGACCTGGGTGTCACCTAAAGACAGTCTCTTTGTCCAGCATCAAGTGCAGAGG
GGAATCTGGCTTCAGGCATGTGTCTCTGATGTCTGCCTGTCCAGGCTGTCTCATTGGGAAAGTCAAAGCTTGCTTAAACTT
TTTGCAAATTCCTCTGCCATCTAGCAACCAGGAATTTACCACGGGGCTAGTTATCCACTGCCCCCACCACAASCCCTAG
CTGCAAGGCAGGCTGGGAAAGCAAGTGTGACTGACACTGGAAGTAGTGTGGGTAATGGTGACAGGTCCATGTGTCTC
AGCTGGTGGGTTCAAGAACAAATGGCTGTCTCTAGTCTTCTGATTGCTAGAGGAGGGGCAGGAGCAGGGTGGCTCTGAGA
GGGCAACTGAGGGCCTTTGCCATCCGTGGCTCTTAGTCACTATGAGAGGATCAGAGGTGTGTGTCTTCCCCACGGGAAA
CAAAGCTCAGACGTTTAGCCTTTTACCTCTGATGGATTAGGAACCTGACTCTGGAAAAAGCTTCCAAAGACCAGAAAGG
AGAAAGAGGGTGGGTGGGGCGAGTAAGAGCTGAGTGGCTCTGGGGAATTGGTGCCAGAGATGGAAATGGGCCTGGCC
TGTGACACCGCTGAGGTATATATTTTGTCTGGTCCCCATTTCCTGCCAGACAGCTTCGGACATCTGGGAGTCTCAGAG
AAGATGTATCTTTTGGTATGCTAATTGTCTCGCTGAGCTGGAATCCCTCACTCCAGGTGAGCGACACCCACCCAGCCT
GAAGAACTGATGTTGGCCTGGTCTAAAACGCCACAGCTGCGGGTCTGACCCACCATACTGTCTACGAAGTTTCCATT
AGCTCCTGCCTCAGAAAAAGTTTCTGGAAGCCTCTGAACCTTACAGCTCAGGTAGCACTCAGGAGATCTGGGAAACACAG
AGCCTTCTCTACACCCTGATTTCTGCTATCTGCCCTTCTGGGCCCTTTACAGTCTGAGCACGAGTCTAATCCAGCCCTT
GGGAGGCAGGTAGTGAGTTCCAGAACATCCAGAGAAATGAAATGAGACCCTGTTTCAAAAACAAAACACCAGTCTGTG
GTTAATATATTATATATTAACATAATATATAATATATAATATAGTGGAACCCAGGAAGAGGGGTTTTAGGTGGGCACC
GGAACCTGTAGTCAGCGGGACCAAGCATAGGAGGAATACTGAGTTGGGGGAGGGGAGTTGTTGAGGAGGGCGCCCC
TGTTGCAGTTACCTGGTAGAGGTGAGAGACCATGGAAGGGATCTGCACTGTAAACAGACAGTAGGGAAAACTGAGGAT
ACACTTTTTCTCTTTCTAGGACTCCCCTTCCCCACAGTGAAGACCACGTTGATAGGGATGTGACTGGGGGCGGTGCTCTG
CCATTGGTGTAGTAATCGCATCACATGCAGTGTCTTGATACTATTTTGTTCATGTCTTGTTTTTTTGAGACAGGATTTCT
GCTGGAACCTTGCTCTGTAGACAAGGCTGGCTTCAAATCACAGAGATCTGCCTGCCTCTGTCTCCCAAGTGCTAGGGTT
AAAGATGTGCCCCGCCACTCCCCCTGCAGTTTGTATGAGCTTTTTTTATGGCCGGTTCTTCACAGAGGTTTTCTCATGCC
CATTTGTTTTAAGGATTTTCATCACTGCTGGTCAAGGATTCCTGCTGCAAATGTTTCATACTTCTTGCCTTGTGATTTGTG
TTTACTGTTTTTCTGAGACATGGTCTTCTGCCTCAGTCTCCTGGGATGACCATTGTGTGCCAAGGGGTAATTTTGTATCA
TTTCTCTCTCCCTCCCAGCGACTTCTACACTTCATGCTTGCTTTCCGCCCCAGCCTTCCCACAATGCTCCCACTGAAGAC
AGTATGGACCTTAGGACAGGGTCTGCAGATAGTGGATACATGGGTTGTGTTTGTGTGCCATCTTGATAAAACAGCAGTT
AAAAAATAGTTTTAAAGTTTGTGTTGTTGTTGTTGTTGTTGTTGTTGAGGGAGTGGGATGGAATTAACATATGGTCTCACT
CTGTAACCCAAGCCGATCTGGAACCTGCTGTGAAGCTGAGAAGTGGCTGCAATTCTCCTGTCTCATTCTTCCAACTGG
GATTATCTGAGACATCATGTCTGGATTTAGAGTACCCCCCCCCAAAAAAAAGACGATTCTTTTACTTTTTATTTATGTAT
ATGGGTGTTTTGCCTGCAACAGACTGCATGCACATCATGCTCTTGGGAAGCCAGAAGAGGGCATCAGGTCCCCCAGAGTT
TCAGATGGTTGAGAGCCATCCTGGGGACACTGGGATTTGAACTTGGGTCCCCTGCAAGAGCAGCAAGTGTCTTAACTA
TCAAATCATGTCTTCAGTTTGTGGACTTTTAAAGTTGATGCTAGTGATGAGACCCAGGGTATTGGGAAATGGCTGGGAT
TCTTTTCAGACAGGGTCTGCCTCAGGCTGGCCTCCAACCTCTCTGACCTTCTGCTTCAACCCAAGCACTGGAATGATAGC

GAGAAGTGTCTCTGCCACGCTTCAGGAAATGTGCTGTGTAGAGAGAATGAGTTCTATGGACGTGTGCTGGATACTATAT
GATGATGGTAGTTTGGTGAGGAGGTAATGTTCTATGTTTACAAAGAAAAACAAAATCTCAGGGCTGCAGAGATGGCT
CATCAGTTAAGAGCACTGGTTGCTCTTGCAAGGACCCAGGTTCCATTCCCCTACCCACATAGCAGGTCAAACAGCCT
GGATCTAATAAGTAAATAATTTTGTGGTAGTATTGTAGAATCAACCCTCACACCAGGACCTCACACTCAATAATAGGCA
ATAGCTACAGTGTCTGCCAACAGAGCAAATCCATATCCACCGGCAATACACAGATAAGTAAGTATTTAGGCTGTAAG
CAGGAGCAGAGAGTATTCTCATCTCTGTCAAAGGCCTGAAGGGTAATACTCAGTATCCACATGTACAAGTCTGTCTTCA
AATAACTGAAAAACAAAACAAAACCAACACAGACACAGAGGTGTGGGCTATTTTTGTTTGGAGACAGGGTTTCACCG
TGCAGCTCTGACTGTCCTGGAACCTACTTGTGTAGACCAGGCTGGCCTTGAAGTACACAGAGATCCTCTTGTCTCTGCCTC
CGGAATGCTAGGATTATCGACATGTGCCACCACGTCTGGCAATGTGTAGGGTTTTAATGCTATTGTTTGGGCTGGAGAT
AGGACTTAGAGCTTCCCAAGCCTATACATGCTCATCACTGAGCTGTGAGTTACAGCTCCTGTCCCAGGCTTGCCCTCTCT
ATGCCTGCCTCCCGGAGGATATTGCAGTGGCTGCCCGCCCTGTGCTGCTGCCACTCCTGGTTTCTTGTATGGCATCAT
GTAGAGCAGACCCTGGAGACTTGTTGTTGATCCAGGAAGTGTAGATGGCTGGGGGGAAAACCTCACCTCCTTCGTGAA
CTCACAGAGGTTGAGGCTGGCCTCTCATGATGACTGCCAAGCCTTGTGGTTACAGTACCACAGTGTCAACAGCAGGAA
GATCAGATCAGATCAGCTGTACAAGAAAGAAATGGGTACAAACACGTGTGTCATATATGCCTTGCAGTGCAAAGACCAT
GCCAAAAGAAGGNN
NN
GAGATGTCAGGGATGGGGCCACAGGTGGACCACAGAG
GAGCAAGCAAAAAGGCCCGGGGAAAAAACAGAGCATCGCAAAAGAAAAAAAAAAGGGGAAAAGGAGAGAGGGGAGAG
AG
GAACTCTTTCTATAACCGCCTTTTTTTCTTTTCTTCCAAAAACCTTTTAAAAGGAGCTGGGGAGGGGGATGTTGCAGGGA
AAGGAGTAACTGGAAATCATCATGTTAATGAAATAAGACAGACTCTGGCCAACAAGAGGGGCTCATTGAATAAAGTGG
CTTGCCACCAAGCCAGATGCCTGAGTTCTATCCCTGGATCCTCAGGGTAAAAAGAGAACTGACTCCTGAAAGTTGTCT
CTGACTTCCATATATGTGTACATACACAAAATAAATAAAATTATGAAAACGAAACCAGACTCAGAATGGCAAACAGT
GTGTGTTCTCTCTCATACACAAAACCCAGATTTAAACCTGTGTATGTGGAGTAGGGAGAGAAATGCTCAGCACGAAAGAT
CACTGGCTGCTGCTGGAAGAGGAGGCCAGTTTCGGTTCGCCAGAACCCAGCTGACAACCTATAACTGTAACCTCCAGTTCTAG
GGGAATTAGAGCTCTACTGGCCTCCTCGGGTACTGTCATGCATGTGGTGCACATACAAACATGCAGGCCAAACAGGCA
CATGCATAATTACATTTTTTTTTTTTTTTGAGACAGGGTTTCTCTGTGTAGCCCTGGCTGTCTGGAACCTCACTTTGTAGACC
AGGCTGGCCTCAAACCTCAGAAATCTGCCTGCCTCTGCCTCCCAAGTGTGCTGGGATTAAAGGCGTGCAGACACCACCACCTG
GCTACATTTTATGTCAGTGTGTCATAGACAGGAGGTCATGAGAGGAGAGGAAGGGATCTTAAAGGAGCAGGAGGAAA
GCGGAAATAGAATTCACGTGACCTGGAGAAAAAGGAGAGGGGTTAAAGCATTTGTCCAGGTCATGAAGACTGGATCTC
AGTACCAC