



Lexicon Genetics Incorporated – Genentech Project Materials

Genentech ID:	UNQ561	Date of Submission:	11.12.04
Lexicon Contract Name:	DNA331	Mutation Type:	X Standard Knock out
LexVision Name:	SEC532N1		☐ Conditional
Reference accessions:	NM_145834	Is this gene X-linked?	No

Required Materials: X pKOS clone DNA(s) __pKOS 26_____
X Target Vector DNA __pTV 26neo_____
X Targeted ES Cell DNA __3E12_____
X Genomic Map

Southern Blot Analysis: *External/Internal Probe Strategies*

	<u>5' External</u>	<u>3' External</u>
Name of Probe:	8+9	11+12
Restriction Enzyme for Genomic Digest:	HindIII	SpeI
Predicted Wild-type Band (kb):	16.7	16
Predicted Mutant Band (kb):	12.6	13.9
Probe Size:	228 bps	243 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:	DNA331-3	5' Primer Name:	Neo3a
3' Primer Name:	DNA331-2	3' Primer Name:	DNA331-7
Predicted Wild-type Band (bp):	404	Predicted Wild-type Band (bp):	none
Predicted mutant band (bp)	none	Predicted mutant band (bp)	385

Primer sequences:**Southern probes**

DNA331-8 5' – CAGGAAGCGTCCACTGTCA
DNA331-9 5' – GTCTACTCCAGGAGTGAGC
DNA331-11 5' – CAGTGAGGTATCATTGCTAC
DNA331-12 5' – GCGAGAGGGAAACTGAATC

PCR Genotyping

DNA331-2 5' – CCTCACCGATATCTCCATGGTG
DNA331-3 5' – CACTGAGAACAGGCAACCTTGG
DNA331-7 5' – CTTCCAGCCTCTGCCGAGTGC
Neo3a 5' – GCAGCGCATCGCCTTCTATC

[illegible][illegible]

CGACAGCCACCTTGTCACTGCCCTCTCTGTCATTGGCCCCACAGGTCATCGTCAACGGTGTTTCATCTACTCTGGCTCTGGCTCGTCCCCTCCCGCTC
CCGCTCCTCCTCCTACAGCTCCTATTCTAGCCGCTCTTCCAGACACAGCTCGTTTCTCAGGCAGCCGATCCAAGTAAGTCCTGCCTGCTGACCTCTAGCAG
GCTCAGTGCTCACGGGTGTGGGGTGGGTCAAAGTGTCTGTCCTCGCAGGTTCTTGGGTGCCTGCTTCCAAATGGTGTTCAGTACCCTGCATCTCATGA
GGAGCCAACACTGTCAGGGGCTGGCTTAGGACTGCCCTCAGGTCCTGTGTTAGCGCGGAGGTAGGAATGTACAGTGTCCAGGCCAGAAGCCCTGGGAG
AGTTAGGCAAGTTTCTTTCTGTGATAGTGTGTCTGCCAGTGGCAGGTGCCCTTACCTCAGTCAGGCTGGCTTGGGGGTAGGGCGGTGCTCAGTGGTCC
GTCTGTCCCTCAACTGAGCTGATGCTCCATCGTGTCCCTTCCCTGCGCTGCTGTCACTGCTCTTTAGAAAGAGCAAACTTTGGCGTGGTGTTCAGTAAA
GCGGAAGTGTTCAGTCTCGTCATTACCTGGGACACATAAAGACACGCAACCCACTGCTTTGGGACAGTGTIACCACATAAGCATTGTGTGGGAATAAAA
TGTTCTGTAGTTCCTTAGTGTAAATTTGGTCCCTTGCACAGTTACCCCTTCTGGCATATGGTCTGTGTTTTATTCTTTAAGGACAGTTTGAAGATTTATATA
TAGCCCTAGCTGGCGCTGGAATTTGCTATGTATTAGATTAGTTTGGCCTCTAACCTCCCACCTGTGTCTGCCTCTCGAGGGCTGGCGGAAAGAAGATGTGC
CGTCACACGCAGCTGCTCTTGTCTGTACATGGAATGAGGGTTAGCGTGCAGTGTCTGAGGCTGTCTTACGGGATGTTCACTGATGCTTCTGCCGGTGTGGA
GTAAATCGCATGGGGTCTGTCTTTCATGAACATAGAAGATAGGAGCTTGTGAAGATAACAGGAAACTAGGAGAGGAAGGTAGACTAGAGAAGGCTGT
TGTGGAGGCCATCCAGAGATGTGCTGGCACAACCCACAGAGCACAAGCATTGCCAGTTCTTGTGCAGGTGTTCAGACAGCGGGGGTGGGGTGGGGT
GGGAGTCAGTAAGAGAAAGACCATGGGCTCAGAGTGGGAAGGACAAGGAAAACTGTGGGAGTCTCTGAGACAGACAAAGGCCACTTAGCTTT
CTGTAAATATGAGGCTGTAGAGGTAGAGAACACAAGGGGCCCTTTAGAAAGGTCAGACTCAGTGTGGAGAGAAAGTTGTGTATATGATGTTTGT
GGCAAGCAGCTAATGATAGTGGCAGAAGGTAGCAGGAAAAACACTCCTGTGCTCTAAGGTTAGGGCCTTGGGTTCGGAGAAGCAGCTGCAACTGGACC
AAGAGGTACAGACTCCAGGTGTACGTCCTGTGTTTCTGGCCCTTGCTAGTAAATGGAGCACAGAAAGCAAGAAGCTGGTGGGTCCGACAGTACAGACA
GGACACAGGAAGGTCTACAGGTACGCCAAGGAGCTACAAGGTAACGTTGCAAGGAGACACCAAGTGGGAATACTCCATCCCATCTTATGTCAGAGAG
CTTCATCATGGTCTCCCCATTCCACAGTGGCGCATGCCCTTCTCAGTGGCGTAGCCTCACTTGGTGTCCGTACTATCCTTCTGGAGACCTGTCACTCTGG
GTGTCCAGCTTGAAGTGAGGAAGGAGACCTGGAGTCTAGCCTTGGGGTCTGCAGCTGTCTTCTGAAGTTCATCTATAGCAGCCCCCTCCCAAAGC
CGCACTCAGGAGGGCTGTGTAGGAAGAAGCAGGGGCTGAGGAGGAGGAGGCTGGCCTGTGCCAAGGCTTGGAGGGTCCCCCTGGGTGCGCAGTATTCT
GGCCTCCTGTAGTGTCTGCCATGAGAGTAATGTAGTTTCCGGGAGCATGCTCTTGGCCATGAAAGCATGGAGGACTGCAGGAACCTGACCCAT
TGCTGGCCCCACTAGCTCGACGCTGCAGGCAATCAATGTGGTGGTTCTGAGTAGGTAACATAGGCCAACCAGTCTTTGATCCTCTCGACTGAAGTG
TGAGCTCACTGTTAGAACTTCATCCTGGAACTCCGCGCTGGACCAGCACCCCTTCTGGGCTGCTGTCTACCCTGCTGACACCTGACACTGTGGAAAT
CATCCGGCCATAATCTCCCCGCTGTACACTCCCTGCTTATGTCTATGCTGCACTTCTTGGGGACCTACCTCTGTGCTGTGCTGTGCTGTGCTGCGGACCAGGC
GTGTGGGACCTTACCAGCTTGCACCTCCCGGCTTCTAGGTGCTTGGATTCTACACTTAGCCAAAGCCATCTCCACCTATTAGCCCCATGCTAAGG
CAGAACCATGTGCTTCTCTGTGCATACAAGCTCCATTCTGAGACTGCGCATGCCCTTTTCTGTTCTCTCTATCAGAGTGTGTGTTCTATCAGATGG
TGAAACAGCTGAGCCTGAGCCTAAGGTCTCTGTTTCTAGGGGATGTGCCAGCTCCAGCCAGTAAGGGAATTTGCCAAGCACCAGACTTCTTCTCACA
CTGTCTTTGTTCCCCAGTCCCGGTCTTCTCTCGTCCCCATCCCCGTCTCCACACCTTCCCCACACAGACCTCCAGTCAGAACCAGGGGGAGCCGG
CCCCACCTCTGGGAAAGCAGGGTGAGTCTGAGCCCTCAGTTTGTCTGGTGTCTCCACCTCGGTGGGGTCTCCAGGGATTCCGGGCTCTCCTCACTC
TCCCCATCCCATGCTTGAATCAGTGAAGTGAAGCCCTCCAAAGGGCAGCAGATCTGGCTCCAGGAGTGGGGCGGAGGCACGGCTCAGCACCCTAGACTT
GGGTCCCTGTAGCGTGGAACTTACGAGTCATGTGCCGTGCTTAACTGTAGAACCCTGAGATGTGGGTTTATTGAGCAGGGACCCTAGCCCTACCCTG
CCTTGACCCGGCTTGCCTACAGGGAGAAGTCAATAAGAAGCCAGCCCTCCCCAGCCCCACCACAGGCCACCAAACCTACTGCTCCTGGTCTCTG
AGCCTGCCAAACCTGGAGATCTCCGAGAAGCCAGGAGAAGGAGCGGCAAAACAGGACTCCCCCAAGGAGGTGAGCAGTGTGGGCTTATGGCAATCC
TGGGACAGTTCTCTTTGCTCTTGGTGCTGATGAAGACTGGAGCTGGGAGTGGGTCCATCCCCAGGGAAGCAGCAAGGAGCAGGCCCAACCTGGGA
ACAGGCTGTGATCCAGCCTGGTGTGCAGGACGGCTCTGCCTCAGTAGAGGCGCCTCTGAGTGTGAACATGTGCTTGTGTGTGCAGGCGGACGCTCAG
GGCAGTGGTAGCGGCAGTGGTAGCAGCTACAGTGGCTCCAGTTCGCGATCCAGGTCACTTGCTTGGTGCTACCCCTATTGACCTTTTTCCCTCACCAG
GTGGGCTGACCATGTTAGGGCTCTTCAGTATCCGGAACACACAGCTCAGGCGAGTATGGTCTCCCTTCACCAACAGCACCTACCTAACCTTTGGGA
AGAGGCGGAGAGTGTCTCTGCTCCCCATGGACAAGAGTGAAGGCTGAGGCGAGTCCGAGTCTCTACCCACACCTTCTGAGGATAGACGGGTGTCTCGGG
GCTGCTGATCCTTATTGGAGGAGCTAGCCCTGAAGCAGTTGGGAGAAAGTCCCTTAAAGAAAACCAAAAGGAGGTAGAAGCTAGAGTCAAGCT
GATGCTTTTGAATCTGGTGACCATTTTTCTCTGTCTCTCCGCATCAGGGCCTTAGCTTTTGTCGAAGGCCTTAGTAATCTAGACTCTTTAAAGACCTA
TGGGATTTTACTTGTGGCTCTTTGAGACAAGGTTTCTGTGTGCCAAACTCACTCTGTAGACCAGGTGGCCTGAAACTCATGGAGATCCACCTGCC
TATGCTCTCCCAAGTCTGGGATTTAAAGGTTGGGCGCCACCATTGCCCGCTGTGTTTGTAAACCAATAAAGAACCCCTGACTATCTTCTCCTGTCTC
TGCTCCTCTGTTCTGTCTCTGATGCCTTAGACCTTAGAAGAAGCTGGTGGTGTGTTGTGATAGACATGTCACTGACATGCCCTGATCAAAACATGTATCACCATC
TACTCTCCTCTCCCTACTCCTGTGCCCTGAGGAGAGTACAAGGTGTCTTAGTGGTCCCACTAAAAACCCAGGGCCTTGCACTTCTGCTCAAGCTCCTGTGTA
CTGAGCTGCAGGCTCGTTTGAATTGGGAGTCTCCTGTGTGCTCCTGTGTTGCCAGATGAGCTTGAACCTCCAAGAAGCTGGGAGCAGAGGGGCT
CCAGCACACCTCCAGCAGCTCACACCCGTTATCTGTAAGCACACCGATCTGCCTGTCTCCAGGTTACCGGGACTATGGGTGTGACTGTTGTGCACCA
CCATCAACTAGCTTTAAAGTTGTGCTTTTATCAGTGTGTACTAGGGCTGAGTCCCAAGTACAGGGTCACTGCAGGTAGTGAAGTAGAGACTCAGAGCTG
TCTTTTCACTATGTATTATGTCTGTGTGCATCCCATAAACATGGAATTCAGGTAAAGACAAGCCATGGAGACCCCTCTGTGAGCTGACAGCCACGCCAT
CTTGCACTCACCGTGGGGCTGAGCGCACAGCTGTGCTTGTGTGTCTAGGTCTCTGAGTGTGAGCAGCGTTTCTCAGTGTCCAGCGCCACCTCGAGTAG
CAGCTCAGTGCACAGTGTGGACTCAGATGACATGTATGCAGACCTGGCCAGTCTGTGTCTCAGCCAGCTCTCGATCCCCAACTCCTGCCAGACCAA
GAAGGAGAGAGGTAGGCAAGGCCCTTGCCCTTGGGATGTGGGCTGGGGTGTAGCTTTCGACAGAGACTTGGCTTTATGGTTCATGTACACAGGAACC
CGTACTGAGGTTGTGCTGTGAGGAGGAAATCCAAGAAAGAACGAGGTGAGAGAGGAAAGAGCTGGGAGCCCTCCGCGCAGCCGCCCAAG
TCCTCTAAAGCTCCAGCGGGTGGGAAGGCCTCCAGCAGGCAGCGCGCCTCAGCCGGCGGTCCCCGGGCAGCCCCAACAGGGCTCCTTTGTTGCCCA
CAAGGAGATAAAGCTGACACTGCTGAACAAGGTGAGACAAGGGGACAGGCTGTATTACTGCACCTGAGCTGGGTACTGGGGTCTCCGCCCAAGGG
ACCTCGCCCATCCATGTGCTGTGACCTGCGGCTGGCCAGCTGGGTGCTGACCCCAACCCAGCATCAGACATCTTCAAAGGCTGACACATGTCTGGAA
GGGCCAAGGCCTGACATGTTGAGATCTGTCAAGGCTCTCCTCATGCAGCACAGAGGGCCCCATCAGATGGTGGCAAGGGCCACAGACTGCTTTGGA
GGGTGAGGGGTTACGCCAAGAGGAGGCTCATGGGAGCAAAAGAACCCTCTCCAGTAACAACAGATACACCGCCACCCTCTGCCTGGCCTAACACGA
TCTGGGGCCTACCGCCCTCACTGTGCTGTTTCAGGCGGCTGATAAAGGAAGCCGGAAGCGTATGAGCCATCAGACAAGGACCGGCAGAGCCCTCCTG
CCAAGAAGGCCAATTTGTCCTCCAGACCGGAGTAAGCCTTGGAGGTCTTGTGCTGAGGTTATACTATGATGTACACCAATAAGCCAGAAGGCCACCT
CGGGGGCTTACACACAGTATATTCTGAAAAGCTAGCGGAACTTAAACCCCACTGTATGTCTGTGATGAGCAGCTAGTGTAGCTAGCAGTCCGACCG
AGCTTTGCTCTTCTTTAGACATTTTCTTACTTTTAGCTCAGGCTGTCTCCAACCTATGATCCTCTGTGCTCCACTCCAAAGTGCTGGGATTATAGG
TGTGTGATGGGAAAGGTTTTAAGTCTTTAAATATAGCTCAGTGGTAGCGCACAAAGATCTCGTTACAGATGATAAATAATGTCTGCCAGCGACACAA
ATGCAGTCTGTTAATAATGACCAACCTTCCAGTATACAACCAAAACAGTGGGTGAGGGGAGGAGTGGGGTCACTGAGTGTAGAGGGCTGACAAAA
GCCCTGGGTTTGGTCTTGGCCCCACATGAAACCTGACAGCTGAGAGCGGAGGGTCAGAAGTTCAAGGTCATCTTGGCTATCCAGAGTCCAGAGC
AGCTGGGCTCATGAGGCAGCAGGCAAACTGACTGAGTGCATCCGCTCTCCTCTCAGCTCGGCTATCTGTCTGTTGATAGGGCCACTGTTGCTATGG
TAAAAACCCATCACCAAAAGTGGCTTGGGGAAGAAAAGGTTTTATTGGCTTACACTTCCACACCCTGTTTCATCATGGAGGTGAGGACAGGAAGCTCGG
GGTGCCTAATGCAGAAGCTGTGACGTGGTGTCTTACTGTCCTGCTCAGCTTGTCTTTCTTATACCGCCCATGACCACCTGCCTAGGGGGAGCAGCAC
CCATAGTGGGCTGGGCTCTCTCAATTAATTAAGTAAACGCCCTTGGCTTACCCACAAACAGCATCTTGGGAGGCATCTTCCCAATCGAGG
TTGTGATGACTCTAGTTTGTGTCAAGTTGCCATAAAACCCAGCTGCACAACAGCAGTCACTGATGAACCTCACCCAGACTGACCCAGCTGTG
CCTCTGCACACCTTAGGGTCATTGGCATGTGGGAAGGCACAGTGGCTCTGAGTCAATGTTTTAACCTTGGAGACTAAGAGAGTCTTGGAGACCCCTCAA
ATCTCCCAGGACACCCCATCTCAAGCCAGCAGGAAAGATGGGGGATTCTCTGGTTTGCTTTAATAGACAGAGCAAAACCAATATAAACCAATACC
TGCTCTCTGTAAGCAGGTGTAGAGGAGGTGACTGCTGCTGTGAGGCTCTGGGGCTCACTTCAGGCAGGTCTCTGGGGCCATGACCTTTGGGCTTTGAA
CTCCAGAGGGAATTTCTTCTCAGAGCCATGGCCATTTGGTCTATGCTCAGGCTTCCCTCTCTCTGCTACCTAGCCAGCCAGCTGACAAAGAGAGCAC
TCCACTCTTGAGTTGGCTTCCAGTTCTAATTCTCTGCATTGTGATGCTGCTGTGCTGAGAGAGAGGGGTCTCACTAAGGAGAAGACTGTATGATGATG

TCCAGCTCCAGGCCTGCTTTCTGAAGGACGCGCTTGGCTTTGCCTGGCTTGTCTTGTCTTGTCTTCTACTATTTATTTGTTTGTGTTTGTGTTAATGTTT
TATGTCCATCGGTGTTTTGCCTTCGTGCATTGTCTGTGAGGGTATTGGACCCCTGGATGGAAGTACAGACAGTTATGAGCTGCCCTACACGT
GCTAGGAATTGAACTAGGTCTCTGAAAAGCAGCAGGAGTCTTAACTGCTGACTCATGTACACCCACCTGGCGTTTCTGTTTTATTCTTTATAGAAA
GAAAAGTGCCAGCTGCCCTGATACTGTGACTTTCTGAGCAGGGCCTCGTGGTGACCCGGGCTGACTTTAATCTCACTATGAGCCAAGGACCACATTCAA
GTCCTGTCTCTCTCTCTACCTCAGGTGCCAGAGTTAGAGCTAACCACACTTGGTCACTTTGATGCTTTGGACTAGGGTTCTCTGACAGCCCCACATA
CAAAGCAGTGGCTTCATTCTGTCCCCCTGCTTACTAGGTTCTCGAGACCCGAAATCAGGTGGAAGAATGGGCTCCCCAAAACCAGAGAGGCAGAGAGG
CCAGAAACGCTAAAGCTTCTGTGCCCCAGCGGACAGGTAAGTCTTGCCTACTTCCATGACAGGCTTGTCTGGACAATGATCGGCTTTAGGAGATG
GGAGACATGGAAGACAGGAAGGAAGGACAGACAGCAGTCTCAGCCCACTCCTCTTTAACCCCTCAGACTAGTCGGGCACAACCTGCATATTACTGTCTT
GTTGAGAACCCTAGACAAGGGCCAGTGGTTCTCAGGGTGCCTATATAGTGGGGCAAATAGGAGAGGGCTCGGGGCTAGCCTACACCCTCCTTGTCTCC
CCACAGAAGAAGTGGGGAGCCCTGGGCACCTACCCAAGGGCAGGCTCTTCTGTCACCTCTGCCTCACACCTTCTCAATCCTACAGGAAGCGTCCACTGTC
ACCCAGTCTAAGGGCTCCAGCAAGGTCACACAGCGTGCCTGGCAAAGCCACAGATCTGCCACAGCAGGCAAGTCAGGGAAGGCCAGCACATG
TCACGGCGAGAGGAGCTCCTTAAACAGCTCAAAGCGGTTGAGGACGCCATCGCTCGCAAAGCGGGCCAAGATCCCCGGGAAAGTGATGAGGCCAGCT
CACTCCTGGAGTAGACTCTTCATGTTTTTATAAGAGTAGGGTAAGCGCAGCCATTTTGGATTTTCCAGTCAATGTCTTATTTTGGCTGTGATTCTTTTA
AAAATTAAGAAAGAAAAAAGATTTCTCAGCTGGAAGAAAGCCACACACAAGATGAAGATGAGGCTGAGTCCCAACCTCCCCACCAGACTGAACC
AGCTTCTTCCAGATAAGATGCTCCTGACAGACAGGACAGATCAGCAGTGAACAGGGGACCAACCTCTGTGTAAGTCTTACGAGCTTCAGGCACGAGG
GGTGGGCTCACCTTCTGCCTCCGTCTCTCCTCCAGGTGACCTCCTGGGTGCACTTTTCAGCAGCTTCTCTGTTGGGACAGGAAAGCGGAACAC
TTCTGGACTACAGGCACCATCCCTCCCTCCCTGGATCAGAAGTATATATATACTTGCTAAAGAAGAATATATATATATATATTCTTGCTAAAGTCTGATT
GGGAAACATTTCTGTCTTTTATTTTAAGCATCAAATTGTTTTAGTTGATTAAAAAGGAAAAAAGACAAAAAATAATAATAATAATAA
GGCCAGGGGTATTGTTGGGTGTCTGTCCAATGTGGAGGGTCTTTTTTGTAGTATCTCTCTAAAAATAAAATATTTGATAAGCATTCTTGCTGCTGGTAA
TGTCTGCTTGGGCTCGGCTCTCTCCGGGACCTCCTTGGCTTGGCTCAAAATGGGCCAAGCACCCTAGGAGAGCAGATGCTATTACCCGAGGAG
CCAACGGGCACAGACTGCCTGTCAATTACCCCCCCCCCGGAGTGTTAAGCCTCAGTTTTCCATCCTGTGGTTGAGGAAAGAGCAGCCCAGCTCTTAG
CGTGACTCGGAGTGATTAGGGGGTACCTCCCTCCCGTGAGCCCTGGCTGAGCAGGGACTGTAGACACGATTGCCTGACCCAGCTATAAAGCTGCTT
GTCATTCTGTGTGAAGCTGTGCTGGCCCTACCCAGGCACATGTTTCAGGCCCAGGCTATGCAAAGCCTAGCTAAGATTGCAGGACTTGACTCGCG
TGTCCCTCCTAGGCTTCATTATTCTGTGAGAGGACCTTGATTAAGATGCGTCACTGACAGCAGGTCAATACCAAGCAGCTTCTTCTAGGCCACGA
GTCCTGGTGGTGTGCCAGCCTCATCTGTTCTGGCACCATCTTCCAGGAAGTACCATGCCCCAAAAGCCCCCAAGTCTGAAGGAGCTGAGAGGACAGCC
AGCCCAGGCGTCATTCTCAGAAATGTCTGCATCTCCTTTGAGACAGGGTCGCATTAGCCTGGAACCTACCATTAGGCTGGCCTGGCTAGCCTAAGACC
TTGGGACCTACCTATTTATACCTCTCCAGACAGCACAAGTGACATTTTTCTAGTATTCTAAGGATTGGACTCTGATCCTTTGTGTGACAGGAAGCAAGCTC
ACTACAGCTGAGCTTGCTCCCAACCACTTAGCTCAGGCTTACCCAGGATAGACTAGACCCACATCCTTGTCTTGTGTCAGAAAGCAAGCTC
CTTGGCTATTGACTGGACCCAGGCCCAGGGGAGATGCAGCCCTACCTAGCAACTCCAAACCGACCTACAGCAACCCCTGCCTCAGAGAGACCTGAGA
TCTTCAGACCTGCACTGTTGCCTGACCCAGACAGGGCAGAATCTGTAGGGGCTGCTCAAGTCTAGCGTGGGCGGGCCTGCCAGCCAGGGCGGGTCTG
CCCAGCATCCTTCTCTCTCTGGGTGCTTTTCCAGTCTTGCCCAACCTGGGACTTCTGCATGAACCTCAGGAGCAAGGCTACCTACCTCTGCCTCCAAT
GCTTGCATGTGTTCTGCTCCCAATAACACCACTCTCTCTATCCTACGTACAGTCAAGGCAAGTGTCTTGTGAGGAGAGCTGCACTCAATCTCTCAGAC
TGCCCATGAGCCACAGCTGGTTAAAGTGAAATACAAACAGGGTGGGAAGACAGGGGCTGAGACCAAAGGTTACAGGACAAAGTCTGCTGGGCCGG
GCTTGACTAGCTGTTCTGATGCCATCTTAGGGCACCCATGGACTCTCAGCTCCAACGTGGGAGCTCAGAGGCTAGTATGCTAGTGCCATCTGCCCCAG
GAGTCTGTGCAATTCAAGAGATGGAGATGTCTGAATTGAAGCCCTGCTTGAGCTTAACTGGGCACAGAACAGCTGTAGCCACTGGGGCCACAGGAC
CAACACAGAGACTACCATAAGCCAAGGCAGGAGGTCTGGTCACCTCAGCCGTGTCCATTTGGAAAAATGGCCCATAGCACACAGGTCCACAGATCTCAG
TCTCAGGACCCGGCAGGAAGCAGAGATAGTACATATGTGTACACACATATATGTTGACTGCTCGGTAAATTGTCGGGCAACCTGGGCTCAGTTTTC
ACCTGTGCAGTGGGTAACTGGAGTTCTAGAGTGTGCACGTGGCAATAGTTGAGCATGTCTCAAAGTTCTGCTCTGTTCTCTGCTGGGCTGAGG
TACCAGTGGAAACAGGGACAGGAGGTGTGCACTCCCTCGCACTGGGCACTGCCTTGACAGAGCCCTTTTCATAGGGAGCCACGTGGCCCTCTGGGCT
CCACTCTGGGAGAAGCAGCCCTGGGAGAGATGGCTGGTCTAGAGTAGGGGCTCTGCACTGGGCTTCTCTCCCGGAATTCTCTCTAATTTCCCATTT
CTGTTTACACAGACAGACACACACACACACACACACACACACACATACATGCAAGCAGACATAGAGACAGCAGACACACACAGAGAC
ACACATATACACAGACACACACACATAGAGACAGATACACAGAGACACAGACACACACACATAGAGACACAGATACACACACACAGACACATAC
ACACAAAGACACACAGAAACACACACATAGACATAGACACACACACACAAACAGACACACAGATACAAACACACACAGAGACATAGACACACAC
ATACACAGAGACAGACAGACACACAGCAGCAGCACTGGTTTTCTTTCTTCTGTGTTCTCTGCTCTCCCCAGGAGCAGCTGGGTGCTGTCAGACAGGTTG
TATACAGAAAGACTCCAAGAAGAGTCTGGAATCTACTGACACATCCTCTCTTCCAGGATATAGCTGGCCAACTCTTCCCTCACTTCACTTCC
GCCTCCTTCCCACCTGTGTCTTGAAGACTCTGTGACTCAGAGCTCAGAATGCAGAAAGCCACAGGAATCATCAGGGTGGCCATTGTTAGCCAGAA
AACGTGGGTCTGGGAAACCCACCCCTGTCCACCAGAGTATTCTCAAAGAACCTGGAGCCCTCCAGCTCCATCTGTATGTGTGGGTGTTAAGTGCAT
GTCAGTGGGCGAGTGTGTGTGCCAGGGAAGTGTGAGATCAGCAGGCCCTCGGCAAGGGAACCTAGGGCTGGGCTTGCACAAAACCTTCTCAGCCC
CAGCTTACAGGACCTTAAGAACACTCACTTCAAAGAGGGCTTCTTGGCTCATTTAGCCAGTCTCAGCCCCACCTGGCATGTTCCTATGTAAAGGGAGG
GTGTAGAGTGTCCATCCAGATTCTGGAAGCAGGCTGGGAGCTGCTGTGAATCTGGTGACAGCCACACTTTCAGCTCCAGTATTCAACTG
ACCCAGCCAGCTGGCGCATGACACTGCCCTCGCGGTGGCCTTTCAAGTCTGTGAGCAGAGCCGCCCTTCATCGAATTGAGTTGTCAATTGTAGGGT
ACCCTGATGTGCCCTTGGTTCTGGGGCTGGGCCACAGCAGATGCTACACCACAGCCCTGCACTCAGTTGACACTGCTTCTAAGTATAAAGGCTGA
TACTGCAGCTATACCTGCCTGCCATCCCAAGAGTTGGACATTTAGAGTCTAGCAAAACCCAGGACACGCGGGGCAACGGTGCCACACGCCTTTAA
TCCCAGCATCTGGGAGCAGAGGAGGAGATTCTGAGTTTGAAGCTGAGCTTCTACAAAGTGAAGTTCCAGGACAGCCAGGCTACACAGAGAAA
CCCTGTCTCGGAAAAAATAAATAAATAAACAACAAACAAACCTGTTGGAGAGGGTCTGGAGAGAGGATTACAGAGTTAAAGCACTGGGTGTTCTT
ACAGCCATGATTCCAGTTCAGGAGATCAAAGGGTCCACTCCTGGCCTCCGTGGGTACCAGACATACGTGCAGACAAAACACTCATCCAGCTGGTT
TGTTTTTTGGGGTGGTTTTATTGTTGTTTGTGTTGTTTATTGCTTGTGTTTACTTGTGTTATTTATTGAGACAGGGTTTCTCTATGTAGCCCTGGTTGTCC
AGGAACACTACCTCGGTAGACAGGCTGGCTCAAATGTGACAAAGATCTGCCTGCCTGCTGAGTGCTCAGATTAAAGGCAAGTGCCCAACATACC
TAGCTCACACAAAAGGCTTATTATTATTATTATAAACTTGTAGGGTCCCATATCAAACCTAGGGGCAATTCCTAGCTTCCATCTCTCCTGCCTGCACAGG
GTGGTGGTGCATGGTGACTTTAGGCAGGAAGCAACCTCCAAGTCCATCCACTGGTCCAGGGCCTGGAACCTTACAGACTCATGTCAGGCAGGATGT
AGCAGCTAAGTCCCCAGTGCCAGCCCCAGAGTCCCTGAGTTCAAACAGCCGAAGTACACAAATCAAAGCGGTGAGCTGCTGAGAACTGCTTGGCTG
AAAGCCCTAGTTCTGTTCCAGAGTGTCTGCCAGGACGAGGCTGTGCTCTCTGGGCACTTCCACTGGGTGGATCTTTGGGTAGAAAGGTTGCCTT
GCAGGGCTCCGAAAGTATCTGTGACGAGGGCGGGTAGGTGTGGCCAGGCGAGGCGGGCTGTTCTCAGGACAGCTGTGGATTAACCTGTGATGC
AAAGGGACAGACCCAGAGGAGGAAGCAGAGCTGGATTTTCCCAGGTGTGGCCCCAGGTATAAAGCACACAGCCAGGCTTCACCTGTTACAGCACTG
GGACCGTCGCCAGGTGTGAGGCTGCTCCGTGTCTGTGCCATGGCCACCGTCAACCTGCTGATGGTGAGCCTGGTGCCTTCCAGCCTCATGATG
ACAGCCTATCCCAGAGGGGTGGATGGCAGGGCCTTTGGATGCCTTTAGGCTAAGCCTATTTGCCACCTACAAAGGGAATCTAAACCCCATCTTTT
ACTGGAACAGGCAACCTTGGGAGGAATGGGTGTTCTCTGGGCTTCCCCTAACCTATGCACCTGCTTGGCTTGTCTTGTCCAGCTGCTTCTAGGCTGT
TGCCTACTGGGATGACCCACCAAGATCCCCCGTCTGGGGGAAACCCCGAAGCCATAGGACCCTGCGGTGCTACTCTGCTGAGGAATTATCTCACGGC
CAGGCTCCTCCACACTGTCTAAGTGCCAGGTGGGAGCAGGCCCCCTCCTGTGGCCCTGGTGGCCAGTTTGGAGGCCACGGGCCACAGGAGACA
GCATGAAGGACCTCTAGCTGGAACACAGTGGCCCGTGTGCGGGCGAGGAGGTGCTGGAAGGTGACACTCAGAGCGCTCCATCTCACCATTGGAGAT
ATCGGTGAGGGTGATGGGTGGGCTCCCATCGGTGGGGCAGTGGGAGCGCTTTATTCCACCCGAGCCCTAGATCATGCTGTCTTTCAGGTGCACAT
GCCCCAACCTCTAAAAACATGTTCCCTAAGAAGCTGGGGCTTGGGGGCTAGAGAGATGGCTCAGCGGTTAAGAGCACTGACTGCTCTGGAAGAGGT
CCTGAGTTCAAATCCAGCAACCACATGGTGACTACAACCATCTGTAATGGGATCTGATGCCCTCTCTGGTGTGTCTGAGGACAGCTACAGTGTATT
TACATATAATCAATCAATCAATCAATCAATCAATCAATCTTTGGGCCGGAGCGAGTGAGGCGAGAAGGGAGGAAGGAGAGAGAGAGAGAAAGAG

[illegible]

CATCTCTGGGCAGTGCCTTGCGAAGCCTCCAAGCCCTCCCCACACTGGGGAACCTCAGCGTCTCACATGCTCGCCCTTCTTGACAAACGTGTGACACAAC
TTCTGTGTAGAAAGCTCCACGTCTGTGTGGTTCTCTTGGCTTCTTCTGTTCCTTCTTCAAGGTGATACATTGCGAGTGTACCCACTACCATCAAGAGC
TGATCGGTGTGTGTGTCTACAAAATTCCCTTTCTCAGATCCAGGTGGCCATTATCTCCTTTGACATTCAAGAACACGGGTCCCTCTTTCCAGTGGGACC
AGCCCCCTGCCCAGTGGGTGCCGACTCCTCACAGGGTTCACCTTCTCAAACGGTGAGTGTGACCTCATGCCAATAGGGTGTTAATCCCACAGCCACCC
ATAGGCTACTTGAAGTCTCTAGTTTCTGCATCTGTGGGTGGAGGCAGCCTCACCCCTACACCCTCCTCAGGCCAGGTCTCAGGCTTTGGCTGTTTGGG
ATCCCTGGCAGCAACAGCTCTTGGCAGCTGGAGGGACTGATGCTCTATGACAATCTTGCTAGGGTGCTGACTCCTGCCTTCTTACGTACGAAGACCCTG
GAGCAGCCTCAGGAAAAGCTTCCATGCTGTTCTGGACATCCCCAGACTCCAGGTCCCTTCCCCTCTTTAAATAGTATTGGTGTTTGGCTATGCTGGGC
TTGAAGCTCGGCTACATATTAACCTTCTGTGTTTGTGCTGGTCAGCTTTAAGGGTGCACTCTGCAGGAGGGAAGGGTACTTTGTACACATTCACTCGGCCT
GCTACCCATAGTCCTTAGGGACTCATGTCCTCACTGTGAGCTTCTGCTACACTGACCACCATGAGTGGGAGGGGTCACTTTTACCCAACAGGGAGACC
CAAGGACTGATTCTCAAGCCCCTGGCTTGCTGAAGTGATACACTGTAACAGAGGGTCAATCCCAGGGAAGCCCCACTATCTGAGGTTGATGTCTCAGC
AGGTGGCATCTGAGTCAAGACTGAAAAGGAGGCATCAGCTGTGACCCAGCCAATTGTACAAAAAGCCCCCCCCCCCCCCCCCTCCCGTGCACAT
TCAGGAAACTCAGAGACAGAGAAGGAGCAACCTAGCAAGGAAGGCAGGAAGAGCCCAGGAGACAAGCAGGGGGGTGAGGAACGGGCTTTCGTCTTG
AGATGGAGCCAGGTAATGGGGCCAGAACAGATGGAATTTTCTGTGATTTAGAAAAAACAAAATAGGGGGGTGAGAGATGGCTCAGGATTAGTAG
CGAGGGTGTGCTCTCAAGGGACCTGAGTGGGGTCTCAGCACCCGCATCAGGCAGTTCAAGGCCACCCGTATGTAACACAGCTCCATGGGTTCCTCAAT
ACCTCTTTAGCTTTTGTCTGAAGCGCCCCGCACTTACACACTGGCCAGACACACACACAATCTGAAAAAATCAAATGTTAAAAAACAAAAAG
GAAACAAAGTACATCCCTGTTGATTGGACCTAGACAGTTGACAACTTCCCAGGACAGTTGTGCTTTCCCGTAAAAAAGAAAAGTATGCGGAAGTACACA
CTCGGTGGAGAAAAGTAAGTGCCACAGCCTGTGACTCCTCAGCACAGGAGACTTGTGTCAGCCTGAACACCCTGAACAATTAGCTGAGGCAGTACATA
GAGACCTTAGCACACACAGGACAGGAGACACTGCATGGACAGCGCTGCCAGGTCTTCCCACCCTTAGGTGTGTCTGGCACCCCCACTTCTCTGGAGG
TAACTTTTGAAACCGTCCATAGTGGTCACAGGACAAACCACTACTGGCAGGAGGCTGGGAAGGGTAAGAAGGGAGACTGCAGGTGGGGGGGGCGC
CATTTTCAAAGGTTGGGGTTGCAAGGCTTCCACAGGCTTCCAGCGTGGGTGGGGAGATTCTCTATCACCTCTTCGATGCGGTATTCCCGGCT
GAGTGGAGGGGGGTCTGGGCCATCCTCCCTGCCCTGGCAGGTCTTTTCTGGCTCCCTTCGGCTTTGAGGCATGTCTGCAGTTTCTAGTCTCAGGCCTGCT
GCTCATGGTCTGGTCTATTAGGTTCCCTTCTGCTGATGAGGCCAGGGGTCCCCTGCCCCCTGGCAAACCTCCCAGACAAGCTGAAGTGTTCAG
CCACGGCCAGGTGTAACCTGACTAAGAGTACTGCTCTGCTGCTTAACCTCGGCAGGCCACTCAGGGCTAAGATCACTCTGAGGGGTGTCCAGACTCTTG
GAAATAGTTTCTGCGCACACTTCGCTGTGGGATGGAGCGATTGCTCTCTAGGATGAGCTTAGCTTCCAGGCCCTCGGGAGAGAGCTGGGAG
CCCCAGTGACCTCAAGGCCAGAGTCCCAACTCCTGGCCAAGTGGGCTGTGCGCAGAAGAGGGTCTTCCGGGGGTTTTCTAACCAGGCGGGAAACCAC
CGAGTGAAATGTCTCTTCCCCAGCTGTAAGCAACTTCTCTCTGAGGTCCCAGCGCGGACCCAACAGGGTGCAGGGCGGGGTGCGCTCTAGAACAGGC
GGCCGAGCAGCGGCTGCAGCGGCCACCGCCGCTCTGTGCCCCGAGGCCCCGCTAGGCTCTCTCCGAGGATCCGCGCTTTGAGGTCCCGCAGAACCGG
CGAGCCCTGTCTTCCCGCGGTGCCCCAGGCTCTGAGCAACCCCTCCACCCGACGCCCACTACTCACTCAGGCCAGGCCAGCGCCTGTTCGTT
GGCCACATGGCCCACTCGATCTGCCCCATGACGAGGACCCTGCGCACACGCGAGCAGCCCGTCCAACCTCTGCAGCCCACTTCGCAAGTCMTCACTGA
TCGGCCCGCCCCCTGCTCAGGCCCGCCCTGTGCGGCTGTGCCCCAGAGGCCTCTCTGCACCTTCCCTTTGAGCCTTGGTGGGTGGGACAGTCTCCCC
ATCGACCTCTCTCTCCAGCTGGAAGTACCAGGGCCACTTGTGACTGCTTGTGACTTGTGACCGTACCCCCCAGGGCCAGAGGCGTAAGTCACTTTCAT
CCACCTGCTCTCTAGTTATCAGATAAAGGCTGCTCCCTAAAAGGAGATGAGGTTACTTCCGACCCACTGTGAGCTGGGCGAGGTGTGTGCTCTGGGT
ACGTTACTACGGGTGGGGTGGGGTACGGGACCATAGTGTGCAAGGTGGGAAAACCCAGGAAGGAGGAGGACAGAAACACCGGAACCGGATGTTCTGTGT
CTCTTCTCTGCTGCTAGACCAGCTCCAGCAGCTGTTGCATGTATGCTGGGGTATGACTTAGGGTGGTCACAAGGTGGCAGGAGACTCTCACGGGGCTG
GCTTGTGGGCAGTGGGAAGTGTTCCTGGCAGGACCCACTTCAGCCCCCCTCTCCACTACATAGGGAACAGACTGAAGTCAATGGCGGGTAGGAC
CCAGCAGATCAGTAGACCAGAGACCCCTAAGCGCTGGTGTAGGAAGAAAGAAAGAAAGCACAGCCACACGGGCAGGCAGGAACAGCACACTTTATTC
CTGTGCTCTCAGGTCCAAGTCTGACCTCTAGTGGGACCCACACACACAAGTACGCTTACCTGCTGGGCTCGACAGCCCTACCCCTACCCAGGAGG
CTTTATAAAGAAACTGTGGCCTGAGTCTCAGCAGAGAGGACCCGCTGTCTGAGCCATCACGCTTAGATGGTTACTGAGGCCCTCAGAGCATCTTGGG
GAGGGGGGAGGACCCGACTCCCATCCCTGATGAGCAGCTGTCTGGAGTGTGGAAGGTCCATCGAGTGGGTGAGTACGCTTACAGAAACCCGCGG
GGAACCGGAGGACCTGAGAGGGGTTCCTGTGCTAGTGGCTGCCATCACACTCGACATCCCCAGTATAATCGATCATCAAGCAGCCCTTC
AGGAGAGGCTGACCAGAGGCCACTCCGAGTTCCAGTGGGCAACCCCTTCTCCAATGGCATGGACGTGAAGAGTCAAAGGTCCCGTGTGTG
CAGTCCATCCTGGCTAGCAGATGATCATGAGTGTGCTAGGACTTGAAGTCTGGTCCGACCTGGGGGAGAAAAATCAGTGTCCAGTCTAGGGGT
GCGGCAGTAGCCGCTGTCCGGAGACTTTACAGGTCAGAGACTCTAAGGCAGGATTAGATTGGGGGGGTGGTGAGACACGGGTGGGTCCCTTCGTGG
TAAGTCCACACCAGCTTGCGCAGGATGAGCCTCTCAAGCTGCCTGGGGTTCATTCCGGGCTAGATTGTGGGGATCTTAGTGACCCTCATCTCGTGTGA
AAGGAGGGACCCAGAGCAAGCCTCTTTGAGCAGGATCAGGAGACGCGGGGATGCTGGCGTGCTTGTGGTGGGTTAC

Selection Cassette: LacZ/Neo

GGCCATAGCGGCCATTTAATGGCGCGCCGGATCCCGGGCCGCTCTAGCTAGACTAGTCTAGCTAGAGGAATCCGCCCTCTCCCTCCCCCCCCCTA
ACGTTACTGGCCGAAGCCGCTTGAATAAAGCGCGGTGTGCGTTTGTCTATATGTTATTTCCACCATATTGCCGTCTTTTGGCAATGTGAGGGCCCGGA
AACCTGGCCCTGTCTTCTTGACGAGCATTCCTAGGGGTCTTTCCCTCTCGCCAAAGGAATGCAAGGTCTGTTGAATGTCGTGAAGGAAGCAGTTCCTC
TGGAAGCTTCTTGAAGACAACACGCTGTGAGCGACCTTTTGAGGCGAGCGGAACCCCTCTGGCGACAGGTGCCTCTGCGGCCAAAAGGCCAGCT
GTATAAGATACACCTGCAAAAGGCGGCACAAACCCAGTGGCAGTTGTGAGTTGGATAGTTTGTGAAGAGAGTCAAATGGCTCTCTCAAGGATTACAA
CAAGGGGCTGAAGGATGCCCAGAAGGTACCCCATTTGATGGGATCTGATCTGGGGCCTCGGTGCACATGCTTTACATGTGTTTGTGAGGTTAAAAA
AACGTCTAGGCCCCCGAACCACGGGGACGTGTTTTCTTTGAAAAACACGATGATAAGCTTGCCACAACCATGGAAGATCCCGTCGTTTTACAACG
TCGTGACTGGGAAAACCTTGGCGTTACCCAACTTAATCGCCTTGCAGCACATCCCCCTTTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATC
GCCCTTCCCAACAGTTGCGCAGCCCTGAATGGCGAATGCGCCTTTCGCTGTTTCCGGCACCAAGCGGTGCCGAAAGCTGGGTGAGTGCGATCTT
CCTGAGGCGCATAGTGTGCTGCTGCCCTCAAACCTAGGCGATGACGCTTACGATGGCCCTACTACACCAACGTAACTATCCCATACGGTACAGTCCG
CCGTTTGTTCACGAGAAATCCGACGGGTGTTTACTCGCTCACATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGCGAATTATTTTGTAT
GGCGTTAACTCGGCGTTTCATCTGTGTTGCAACGGGCGCTGGGTTCGTTACGGCCAGGACAGTCTGTTTGGCGTCTGAATTTGACCTGAGCGCATTTTTA
CGCGCCGGAGAAAAACCGCTCGGCGTGATGGTGTGCTGCGCTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGGCATTTCCG
TGACGTTCTGTTGCTGCTGCAAAAGCGACTACAAATACGCGATTTCAGTTGCTGCACTGCTTAAATGATGATTTCAGCGCGCTGTACTGGAGGCTGA
AGTTACAGATGTGCGGCGAGTTGCGTGAACCTACGGGTAACAGTTTCTTTATGGCAGGGTGAAACGCGAGGTGCGCAGCGGCACCGCGCCTTTCGGCG
GTGAAATATCGATAGCGGTGGTGGTTATGCCGATCGCGTCACACTACGCTCTGAACGTGAAAACCCGAAACTGTGGAGCGCCGAAATCCCGAATCTC
TATCGTGGGTGGTTGAAGTGCACACCGCCGACGGCACGCTGATTGAAGCAGAAGCCTGCGATGTCGGTTTTCCGCGAGGTGCGGATTGAAAAATGGTCT
GCTGTGAGCGGCAAGCGCTGCTGATTGCGAGGATGACCGTCAACCGTACGAGCTATCATCTGCAATGGTCAAGTATTTACGCGCGCTGTACTGGAGGCTGA
AGGATATCCTGCTGATGAAGCAGAACAACTTTAACGCCGTGCGCTGTTTCGATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTACGGCC
TGTATGTGGTGGATGAAGCCAATATTGAAACCCACGGCATGGTGCCAATGAATCGTCTGACCAGTATGATCCGCGCTGGCTACCGCGCATGAGCGAACGC
GTAACGCGAATGGTGACGCGCATCGTAATCACCCGAGTGTGATCATCTGGTTCGTTGGGGAATGAATCAGGCCACGGCGCTTAAATCACGACGCGCTGTA
TCGCTGGATCAAATCTGTGCTACTTCTCCGCGCGTGCAGTATGAAGCGCGCGAGGCCAGACACCGGCCACCGATATTATTGGCCGATGACGCG
GCGTGGATGAAGACCAGCCCTTCCCGGCTGTGCCGAAATGGTCCATCAAAAAATGGCTTTCGCTACCTGGAGAGACGCGCCCGCTGATCCTTTGCCGAA
TACGCCACGCGATGGGTAAAGTCTTGGCGGTTTCGCTAAATACTGGCAGGCGTTTCGTCAGTATCCCGTTTACAGGGCGGCTTCGCTGGGACTGG
GTGGATCAGTCTGATTAATATGATGAAAACGGCAACCCGTGGTTCGGCTTACGGCGGTGATTTTGGCGATACGCCGAACGATCGCCAGTTCTGTAT
GAACGGTCTGGTCTTTGCCGACCGCACGCCGATCCAGCGCTGACGGAAGCAAAACACAGCAGCAGTTTTCCAGTTCCGTTTATCCGGGCAAAACA

TCTGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAACGAGCTCCTGCACTGGATGGTGGCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAAGTG
CCTCTGGATGTCGCTCCACAAGGTAACAGTTGATTGAACTGCCTGAACTACCGCAGCCGGAGAGCGCCGGGCAACTCTGGCTCACAGTACGCGTAGT
GCAACCGAACGCGACCGCATGGTCAGAAGCCGGGCACATCAGCGCCTGGCAGCAGTGGCGTCTGGCGGAAAAACCTCAGTGTGACGCTCCCCGCCGCG
TCCCACGCCATCCCGCATCTGACCACCAGCGAAATGGATTTTTGCATCGAGCTGGGTAATAAGCGTTGGCAATTTAACCGCCAGTCAGGCTTTCTTTCA
CAGATGTGGATTGGCGATAAAAAACAACCTGCTGACGCCGCTGCGCGATCAGTTACCCCGTGCACCGCTGGATAACGCACATTGGCGTAAGTGAAGCGAC
CCGCATTGACCTAACGCCTGGGTGGAACGCTGGAAGCGCGCGGCCATTACCAGGCCGAAGCAGCGTTGTTGCAGTGCACGGCAGATACACTTGCTG
ATGCGGTGCTGATTACGACCGCTCACGCGTGGCAGCATCAGGGGAAAAACCTTATTTATCAGCCGGAAAAACCTACCGGATTGATGGTAGTGGTCAAAATG
GCGATTACCGTTGATGTTGAAGTGGCGAGCGATACACCGCATCCGGCGCGGATTGGCCTGAACTGCCAGCTGGCGCAGGTAGCAGAGCGGGTAAACTG
GCTCGGATTAGGGCCGCAAGAAAACTATCCCGACCGCCTTACTGCCGCCTGTTTTGACCGCTGGGATCTGCCATTGTGACACATGTATACCCCGTACGT
CTTCCCGAGCGAAAAACGGTCTGCGCTGCGGGACGCGCGAATTGAATTATGCCCCACACCAGTGGCGCGGCGACTTCCAGTTCAACATCAGCCGCTACA
GTCAACAGCAACTGATGGAACCCAGCCATCGCCATCTGCTGCACGCGGAAGAAGGCACATGGCTGAATATCGACGTTTCCCATATGGGGATTGGTGCG
GACGACTCCTGGAGCCCGTCAGTATCGGCGGAATTCCAGCTGAGCGCGCGTCTGCTACCATACCAGTTGGTCTGGTGTCAAAAAATAATAAACC
CAGGCCATGTCTGCCCGTATTTCCGCGTAAGGAAATCCATTATGTACTATTTAAAAAACACAAACTTTTGATGTTCCGTTTATCTTTTTCTTTTACTTTT
TTATCATGGGAGCCTACTTCCCGTTTTTCCCGATTGCTGCTACATGACATCAACCATATCAGCAAAAGTGATACGGGTATTATTTTTGCCGCTATTTCTCT
GTTCTCGCTATTATTTCAACCGCTGTTTGGTCTGCTTTCTGACAACTCGGAACCTTGTTTATTGACGTTATAATGGTTACAAAATAAGCAATAGCATCA
CAAATTTCAAAATTTAATTAAGGCCGCGGATCGATCCCGTCGAGCAGTGTGGTTTTCAAGAGGAAGCAAAAAGCCTCTCCACCCAGCGCTGGAATG
TTTCCACCCAATGTCGAGCAGTGTGGTTTTGCAAGAGGAAGCAAAAAGCCTCTCCACCCAGGCTGGAATGTTTCCACCCAATGTCGAGCAAAACCCG
CCCAGCGTCTTGTCTATTGGCGAATTTCGAACACGCAGATGCAGTCGGGGCGCGCGGTCCCAGGTCCACTTCGCATATTAAGGTGACGCGTGTGGCCTC
GAACACCGGACGCACTGCGACCAATTGGGATCGGCCATTGAACAAGTGGATTGCACGCAAGGTTCTCCGGCCGCTGGGTGGAGAGGCTATTGCGC
TATGACTGGGCACAACAGACAATCGGCTGCTGATGCCGCCGTGTTCCGGCTGTGACGCGAGGTTCTCCGGCCGCTGTTTTGTCAAGACCGGACTGTCC
GGTGCCTGAATGAACTGCAGGACGAGGACGCGCGCTATCGTGGCTGGCCACGACGGGCGTTCCTTGCGCAGCTGTGCTCGACGTTGTCACTGAAGC
GGGAAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCCTGTCATCTCACCTTGCTCCTGCCGAGAAAGTATCCATCATGGCTGATGCAA
TGCGCGCGCTGCATACGCTTGATCCGGCTACCTGCCCCATTGACCCACCAAGCAAAACATCGCATCGAGCGAGCAGTACTCGGATGGAAGCGCGTCTT
GTCGATCAGGATGCTTGGCAAGAGCATCAGGGCTCGCGCAGCCGAACTGTTCCGAGGCTCAAGGCGCGCATGCCAGTCCGAGGAGTCTCG
TCGTGACCCATGGCGATGCTGCTTGGCGAATATCATGGTGGAATATGGCCGCTTTTCTGGATTTCATCGACTGTGGCCGGCTGGGTGTGGCGGACCGCT
ATCAGGACATAGCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCTTCCTCGTGCTTTACGGTATCGCCGCTCCCGATT
CGCAGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGGGGATCGGCAATAAAAAGACAGAATAAAACGCACGGGTGTTGGGTGCTTTGTT
GGATCCGAATTCCTCGAGGGCGCGCCATTTAATGGCCAGCGAGGC

Targeted Locus:

TATGTCCATCGGTGTTTTGCCCTCGTGCAATTGTCTGTGAGGGTATTGGACCCCTGGATGGAAGTACAGGTTACAGACAGTTATGAGCTGCCCTACACGT
GCTAGGAATTGAACTGAGGTCTCTGAAAGAGCAGCCAGTCTCTTAACTGCTGACTCATGTCACCCACCCTGGCGTTTCTGTTTTATTCTTTATAGAAA
GAAAAGTGCCAGCTGCCCTGATACTGTGACTTTCTGAGCAGGGCCTCGTGGTGACCCGGGCTGACTTTAATCTCATAATGAGCCAAGGACCACATTCAA
GTCTGTCTCTCTCTCTCTCCTCAGTGGCCAGGTTAGAGTCAACACACTTGGTCACTTTGATGCTTTGGACTAGGGTTCTCTGACAGCCCCACATA
CAAAAGTGGCTTCACTTCTGTCCCTTGCTTACTAGTTCTCGAGACCGGAAATCAGGTGGAAGAAATGGGCTCCCCAAAAACAGAGAGCGAGAGG
CCAGAACGCTAAAGCTCTGTGCTGCCCCAGCGGACAGGTAAGTCTCTGCCTACTTCCATGACAGGCTTGCTCTGGACAATTGATCGGCTTTAGGAGTATG
GGAGACATGGAAGACAGGAAGGAAGGACAGACAGCAGTCTCAGCCACTCCTCTTTAACCCCTCAGACTAGTCGGGCACAACCTGCATATTACTGTCTT
GTTGAAGAACCCTAGACAAGGGCCAGTGTTCTCAGGGTGCTATATAGTGGGGCAAAATAGGAGAGGCTGCGGGCTAGGCTACACCCCTCTGTCTCC
CCACAGAAGAAGTGGGGAGCCTTGGGCACCTTACCAAGGGCAGGCTTCTGCTACCTCTGCCTCACACCTTCTCAATCTCAGGAAGCGTCCACTGTG
ACCCAGTCTAAGGGCTCCAGCAAGGTCAACAGCGTGCCTGGCAAAGCCACAGATACTGCCACAGCAGGCACCAAGTCAGGGAAGGCCAGCATTG
TCACGGCGAGAGGAGCTCCTTAAACAGCTCAAAGCGGTTGAGGACGCCATCGCTCGCAAGCGGGCCAAAGTCCCCGGGAAAGTGATAGTGGCCAGCT
CACTCCTGGAGTAGACTCTTCATGTTTTTATAAGAGTAGGGTAAGCGCAGCCATTTTGGATTTTCCAGTCAATGTCTTATTTTGGCTGTGATTCTTTTTA
AAAATTAAGAAAGAAAAAAAAGTTTCTCAGCTGGAAGAAAGCCACACACAAGATGAAGTAGGCTGAGTCCCAACCTCCCCACCAGACTGAACC
AGCTTCTTCCAGATAGACTGCTTCCATGTTTCTCAGCAGCAGTACAGCGGACCAACTCTGTGTAACCTTCTCAGGACCTTCAAGGCTTCAAGCAGG
GGCTGGCCTCACCTTCTGCCTCCGTCTCTCACTTCTCCCAGGTGACCTCCTGGGCTGCAGTTTTTACGAGCTTCTCTGGGGACAGGAAAGCCGAACAC
TTCTGGACTACAGACCACTCCCTCCCTCCCTGGATCAGAAGTATATATATACTTGCTAAAGAAGAAATATATATATATATTCTTGCTAAAGTCTGATT
GGGAACACTTCTCTCTTTTTATTTAAGCATCAAAATGTTTATGATTGATTAAGAAAGGAAAAAACAGAAAAAGCAAAAAAATAATAATAATAAAA
GGCCAGGGTGATTGTTGGGTGCTGTGCTCAATGTGGAGGTTCTTTTTTGGAGCTATCTCCTAAAAATAAAAATTTTGATAAGCAGTCTTCTGTTCTGTA
TGTCTGCTTGGGCTCGGCTGCCTCTCTCCCGGCATCCATGCCTTGGCTCAAAATGGGCCAAGCACCCCTAGGAGAGCAGATGCTATTACCCGCGAGGAG
CCAACGGGCACAGACTGCCTGTCAATTACCCCCCCCCCGGAGTGTTAAGCCTCAGTTTCCCATCCTGTGGTTGAGGAAGAGCAGCCAGCTCTTAG
CGTGACTCGGAGTGATTAGGGCTACCTCCCTCCCGTAGGCCCTGGCTGAGCAGGGACTGTAGACACGATTGCTGACCCCGACTATAAAGCTGCTT
GTCATTCTTGCTGTGAAGCTGTTGCTGGCCCTCACCCAGGCAGTGTTCAGGCCAGGCTATGCAAAAGCCTAGCTAAGATTGACAGGACTTCAAGCTCGG
TGTCCTTCCATGGCCTTCATTATTCTGTGAGAGGAGCACTTGATTAAGATCCAGTCAGTGCAGACAGGTCAATACCACAGCGTCTTCTAGGCCACCA
GTCCTGGTGGTGTGCCAGCCTCATCTGTTCTGGCACCATCTCCAGGAAGTACCATGCCCAAAGCCCCAAGTCTGAAGGAGCTGAGAGGACAGCC
AGCCCAGGCGTCATTCTCAGAAATGTCTTGATCTCCTTTGAGACAGGGTCGATTAGCCTGGAAGTCAACCATAGGCTGGCCTGGCTAGCCTAAGACC
TTGGGACCTACCTATTATACCTCTCCAGACAGCACAAGTGACATTTTCTATGATTCTAAGGATTGGACTTGATCCTTTGTGTACGAAGGCAAGCTC
ACTACCAGCTGAGCTTGTCCCAACCAACCTTAGCTCACCAGGTTACCCAGGATAGACCTAGACCCACATCCTTGCTCTGGGTCAGAGTGTACGCCAT
CTTGGCTATTGACTGGACCCAGGCCAGGGGAGATGCAGCCCTACCTAGCAACTCCAACCCAGCTACAGCAACCCCTGCCTCAGAGAGACCTGAGA
TCTTCAGACCTGCAGTGTGCTGACCCAGACAGGGCAGAATCTGTAGGGGCTGCTCAAGTCTAGCGTGGGCGGGCCTGCCAGCCAGGGCGGGTCTG
CCCAGCATCTTCTCTCTCTGGGTGCTTTTCCAGTCTTGCCCAACCTGGGACTTCTGATGAACCTCAGGAGCAAGGCTACCTACCTCTGCCTCCAAT
GCTTGACTGTGTTCTGGCTCCCACTCAACACCACTCTCTCTATCTACGTACAGTACGGGACGTGCTTGTGTCAGGAGCACTCAATCTCAGGAC
TGCCCATCCAGCCACCAGTGGTTAAAGTGAAATACAAAACAGGGTGGGAAGACAGGGGTACTGAGACCAAGGTTACAGGACATAGTCTGGGCCCCG
GCTTGACTAGCTGTTCTGATGCCATCTTAGGGCACCCATGGACTCTCAGCTCCAACGTGGGAGCTCAGAGGCTAGTATGCTAGTGCCATCCTGGCCAG
GAGTCTGTGCATTTCAAGAGATGGAGATGTCTGAATTGAAGCCCTGCTTGAGCTTAACTGGGCACAGAACGCTGTAGCCACTGGGGCCACAGGAC
CAACACAGAGCTACCATAGCCAAAGGAGGAGGCTGCTGACCTACCTGAGGTGTTCCATTGAGGAAATGGCCATAGCCATAGCAGGTCACAGTCTCAG
TCTCAGGACCCGGCAGGAAGCAGAGTAGTACATATGTGTACAACATATATGTTGTACTGCCTGGGTAAATTTGCGGCAACCCCTGGGCCTCAGTTTTTCC
ACCTGTGCAGTGGGTAACCTGGAGTTCCTAGAGTGTGACGCTGGCAATAGTTGAGCATGTCTCCAAAGTTCCTGCTCTGTTCTGTCTGGGCCTGAGG
TACCAGGTGGAACAGGGACAGGAGGTGTGCACTCCCTCGCACTGGGCAGCCCTTGACAGAGCCCTTTTCATAGCCGAGCCAGCTGGCCCTCTGGGCT
CCACTTGGGAGGACAGCCCTGGGAGGAGATGGCTGGTCTAGATGAGGCGCTTGCAGTGGGCTTCTCCCGGAATTTCTCTCTAATTTCCCATTT
CTGTTTACACACAGACACAGACACACACACACACACACACACATACATCGACAAGCAGATAGAGACACAGACACACACAGAGAC
ACACATATACACAGACACACACATAGAGACAGATACACAGAGACACAGACACACACACATAGAGACACAGATACACACACACAGACACATAC
ACACAAAGACACACAGAAACACACATAGACATAGACACACACACAAACAGACACACAGATACACAAACACACACAGAGACATAGACACACAC
ATACACAGAGACAGACACACACGACACACACTGGTTTTCTTCTTCTGTGTTCTCTGCTCTCCCCAGGAGCACTGGGTGCTGTACAGACAGGTTG

TATACAGAAAGACTCCAATCCAAGAAGAGTCTGGAATCTACTGACACATCCCTCTCTTCCAGGATATAGCTGGCCAAACTCTTCCCTCACCTCCAATCT
GCCTCCTTCCCACCTGTGTCTTGAAAACCTCTGTACTCACAGACTCAGAATGCAGAAAGGCCACAGGAATCATCAGGGTGCCCATTTGGTTAGCCAGAA
AACGTGGGGTCTGGGAAACCCACCCCTGTCCACCAGAGTATTCTCCAAGAACCTGGAGCCCTCCAGCTCCATCTGTATGTGTGGGTGTTTAAGTGCAT
GTCAGTGGGCGAGTGTGTGTGCCAGGGAGAAGCTGGAGATCAGCAGGCCCGTCGGCAAGGGAACTAGGGCTGGGCTTTGCACAAAACCTTCTCAGCCC
CAGCTTCAGGACCCCTTAAGAACACTCACTTCAAAGAGGGCTTCTTGGCTCATTTAGCCAGTCTCAGCCCCACCTGGCATTGTTCCATGTAAAGGGAGG
GTGTGAGAGTGTCCATCCCAGATTCTGGAAGCAGGCTGGGAGCCTGGCACTCTGTGAATCTGGTGACAGCCACACTTTCAGCCTCCAGTGATTCAACTG
ACCCAGCCAGCTGGCGGCATGCCCTCGCGGTGGCCTTTCAGGTCTGTGAGCAGAGCGCCCTTCATCGAATTGAGTGTGTCATTGTAGGGT
ACCCGTGATGTGCCCCCTTGGTTCTGGGGCTGGGCCACAGCAGATGCTACACCACAGCCCTGCACTCAGGTTGACACTGCTTCTAAGTATAAAGGCTGA
TACTGCAGCTATACTGCCTGCCTCCATCCCAAGAGTTGGACATTTTAGAGTCTAGCAAAACCCAGGACACGCCGGGCAACGGTGGCACACGCCTTTAA
TCCCAGCACTTGGGAGGCAGAGGCAGGCAGATTCTGAGTTTGGAGCCAGCCTGTTCTACAAAGTGAGTTCCAGGACAGCCAGGGCTACACAGAGAAA
CCCTGTCTCGGAAAAATAAAATAAAATAAACAAACAAACAAACCTGTGGAGAGGGTCTGGAGAGAGGATTACAGAGTTAAAAGCACTGGGTGTTCTT
ACAGCCATGATTCCAGTTCCAGGAGATCAAAGGGTCCACTCCTGGCCTCCGTGGGTACCAGACACATACGTGCAGACAAAACACTCATCCACGTGGTT
TGTTTTTTGGGGTGGTTTTATTGTTTGTTGTTTTGTTGTTATTGCTGTGTTACTGTGTGTTATTTATTGAGACAGGGTTTCTCTATGTAGCCCTGGTTGTCC
AGGAACTCACTCGGTAGACCAGGCTGGCCTCAAACCTACAAAGATCTGCCTGCCTCTGCCTCTGAGTGCTCAGATTAAAGGCAAGTGCCAAACATACC
TAGCTACACAAAAGGCTTATTATTATTATAAACTTGTAGGTTCCCATATCAAACCTAGGGGCATTCCCTAGCTTCCATTCTCTGCTGCTCAGAGG
GTGGTGGTGATGGTGACTTTAGGCAGGAAGCAGCAACCTCCAGTCCATCCACTGGTCCAGGGCTGGAACCTTACAGACTCATGTCAGGAGGATGT
AGCACGTAAGTCCCCAGTGCCAGCCCCAGAGTCCCTGAGTTCAAACAGCCGAAGTACACAAAATCAAAGCGGTGAGCTGCTGAGAACTGCTTGGCTG
AAAGCCCTAGTTCCTGGTTCCAGAGTGTCTGCCAGGCAGGGCCCTGTGCTCTCCTGGGCATTCCACTGGGTCCGATCTTTGGGTAGAAAGGTTGCCCT
GCAGGGGCTCCGAAGTATCTGTGACAGCGGGCGGGTAGGTGTGGCCAGGGCAGGGCCGGGCTGTTCTCAGGACCTAGCTGGATAACTCTGTGATGC
AAAGGCGACAGCCAGAGGAGGACAGCAGAGCTGATTTCCTCCAGGTTGGCCCCAGGTATAAAGCACACAGCCAGGCTTCACCTGTGTACAGCACTG
GGACCGTCGCCAGGTGTGAGGCTGCTCCGTGTCTGCTGCCATGGCCACCGTCAACGTCACCTGTGATGGTGAGCCTGGTGCCTTTCCAGCCTCATGATG
ACAGCCTATCCCAGAGGGGTGGATGGCAGGGCCTTTGGGATGCCTTTAGGCTAAGCCTATTGCCCACCTACAAAGGGAAATCTAAACCCCATCTTTTC
ACTGAGAACGCCAACCTTGGGAGGAAATGGGTGTTCTCTGGGCTTCCCCTAACCATGACCTGCTGCTTGTCCACAGAGTCTCTGGCGCTCTAGAGG
CCATAGCCGCACTTAAATGAGGAGCCGATCCCGGGCCGCTCTAGTACTAGCTAGCTAGGAAATTCGCCCTCTCCCTCCCCCCCCCTAAC
GTTACTGGCCGAAGCCGCTTGAATAAAGGCCGGTGTGCGTTTGTCTATATGTTATTTTCCACCATATTGCCGTCTTTTGGCAATGTGAGGGCCCCGAAA
CCTGGCCTGTCTTCTTGACGAGCATTCTAGGGGTCTTTCCCTCTCGCCAAAGGAATGCAAGGTCTGTTGAATGTCTGAAGGAAGCAGTTCCTCTG
GAAGCTTCTTGAAGACAAACACGCTGTAGCGACCTTTGACAGGACGCGAAACCCCTGCGGACAGGTGCTCTGCGCCAAAAGGCCACGTGT
ATAAGATACACCTGCAAAACCGGCACAAACCTGACCGATTGAGTTGGATTGGTTGGAAGAGTCAAATGGCTCTCTCACTGATTTTCACTAACA
AGGGGCTGAAGGATGCCCAGAAGGTACCCCATTTGTATGGGATCTGATCTGGGGCTCGGTGCACATGCTTTACATGTGTTTGTAGTCAGGTTAAAAAAA
CGTCTAGGCCCCCGAACCACGGGGACGTGGTTTTCTTTGAAAAACACGATGATAAGCTTGCACAAACCATGGAAGATCCCGTCGTTTTACAACGTG
TGACTGGGAAAACCTTGGCGTTACCCAACTTAATCGCCTTGACAGCACAATCCCCCTTTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCC
CTTCCCAACAGATTGCGCAGCCTGAATGGCGAATGGCGCTTTTCCGTGGTTCCGGCACCAGAAGCTGCGGAAAGCTGGCTGGAGTGGCATCTCTCT
GAGGCGGATACTGTCTGCTGCTCCCCCTCAAACTGGCAGTGACAGCGTTACGATCGGCCCATACCAACGTAACCTATCCCATACCGTCAATCCGTCG
TTTGTTCACCGGAGAATCCGACGGGTGTTACTCGCTCACATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGCGAATTATTTTTGATGGC
GTTAACTCGGCGTTTCATCTGTGGTGCAACGGGCGCTGGGTGCGTTACGGCCAGGACAGTCGTTTGGCCTCTGAATTTGACCTGAGCGCATTTTTACGC
GCCGGAGAAAACCCCTCGCGGTGATGGTGTGCGCTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGGCATTTTCCGTGA
CGTCTCGTTGCTGCATAAACCGACTACACAAATCAGCGATTTCCTATGTGTCACCTGCTTTAATGATGATTTCAGCCGCTGATACCTGGAGGCTGAAGT
TCAGATGTGCGGCGAGTTGCGTGACTACCTACGGGTAACAGTTTCTTTATGGCAGGGTGAAACGCAGGTGCCAGCGGCACCGCGCCTTTCCGGCGGTG
AAATTATCGATGAGCGTGGTGTTATGCCGATCGCGTCACACTACGTCGTAACGTCGAAAACCCGAAACTGTGGAGCGCCGAAATCCCGAATCTCTAT
CGTGGCGTTGTAAGTGCACACCGCGCAGGCACGCTGATTGAAGCAGAAGCTGCGATGTGCGTTTCCGCGAGGTGCGGATGAAAATGTTCTGTCT
GCTGCTGAACGGCAAGCGTTGTGATTTCGAGCGGTTAACCGTCACGAGCATCATCCTCTGCTATGGTCAGGTCATGGATGAGCAGACAGTGGTGCAAG
ATATCCTGCTGATGAAGCAGAACTTTAACGCCGTGCGCTGTTTCGATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTACGGCCTGT
ATGTGGTGGATGAAGCCAATATTGAAACCCACGGCATGGTGCAATGAATCGTCTGACCGATGATCCGCGCTGGCTACCGGCGATGAGCGAACCGGTA
ACGCGAATGGTGCAGCGCATCGTAATACCCGAGTGTGATCATCTGGTCTGGGGAATGAATCAGGCCACGGCGCTAATACGACGCGCTGTATCG
CTGATCAAACTCTGTCATCTTCCCGCGGTGACAGTGAAGCGCGGAGCCGACACCGCCAGCATATTATTGCCCCGATGATCCGCGCGC
TGGATGAAGACCCCTTCCCGCTGTGCCGAATGGTCCATCAAAAATGGCTTTTCGTACTCTGGAGAGACAGCGCCCGCTGATCCTTTGCGGAATAC
GCCCACGCGATGGGTAACAGTCTTGGCGGTTTCGCTAAATACTGGCAGGCGTTTCGTACGATACCCCGTTTACAGGGCGGCTTCGTCTGGGACTGGGTG
GATCAGTCTGCTGATTAAATATGATGAAAACGGCAACCCGTGGTGGCTTACGGCGGTGATTTTGGCGATACGCGGAACGATCGCCAGTCTGTATGAA
CGGTCTGGTCTTTGCCACCGCACGCGCATCCAGCGCTACGGAAGCAAAACACCCAGCAGTATTTTCCAGTTCCGTTTCCCGGAAACCATCGA
AGTGACAGCAATAACCTGTTCGTCATAGCATAAGCAGCTCTGCTACTGGATGGTGGCGCTGGATGGTAAGCGCTGTAAGCGGTGAAGTGCCTCA
TGGATGTGCTCCACAAGGTAACAGTTGATTGAACTGCCTGAACTACCGCAGCCGAGAGCGCGGGCAACTCTGGCTCACAGTACGCGTAGTGCAA
CCGAACGCGACCGCATGTCAGAAGCCGGGCACATCAGCGCCTGGCAGCAGTGGCGTCTGGCGGAAAACCTCAGTGTGACGCTCCCGCGCGCTCCCA
CGCCATCCCGCATCTGACCAACACAGCGAAATGGATTTTGCATCAGCTGGGTAATAAGCCTTTGGCAATTTAACCCGCACTCAGGCTTTCTTTACAGAT
GTGGATTGGCGATAAACAACTGCTAGCGCGCTGCGCGATGTTACCCGCTGATGTCACCGCTGGATAACGACATTTGGCGTAAAGTGAAGCGACCGCA
TTGACCCTAACGCCCTGGGTGCAACGCTGGAAGGCGGGGCCATTACCAGGCCGAAGCAGCGTTGTTGCAGTGCACGGCAGATACACTTGCTGATGCG
GTGCTGATTACGACCGCTCAGCGTGGCAGCATCAGGGGAAAACCTTATTATCAGCCGGAACCTACCGGATTGATGGTAGTGGTCAAATGGCGAT
TACCGTTGATGTTGAAGTGGCGAGCGATACACCGCATCCGGCGCGGATTGGCTGAAGTCCAGCTGGCGCAGGTAGCAGAGCGGGTAAACTGGCTCG
GATTAGGGCCGCAAGAAAACCTATCCGACCGCTTACTGCGCGTGTGTTGACCGCTGGATGTGCCATTGTACAGCATGTATACCCCGTACGTTCTCC
CGAGCGAAAACGGTCTGCGCTGCGGGACGCGCAATTGAATTATGGCCACACCACTGGCGCGCGGACTTCCAGTTCAACATCAGCCGCTACAGTCAA
CAGCAACTGATGGAACACAGCCATCGCCATCTGCTGCACGCGGAAGAAGGCACATGGCTGAATATCGACGGTTTCCATATGGGGATTGGTGGCGACGA
CTCCTGGAGCCCGTACGATATCGCGGAATTCAGCTGAGCGCGGTGCTACCATTACCAAGTTGGTCTGGTGTCAAAAATAATAATAACCGGGCAGGC
CATGCTGCGCGTATTTCCGCTAAGGAAATCATTATGTACTATTTAAAAAACACAACTTTGGATGTTCCGTTTATCTTTTTCTTTTTTATCTTTTTATC
ATGGAGGCTACTTCCCGTTTTCCCGATTGCGTATGCTGACATCGACATCAACCATATCAGCAAAAGTGTACGGGTATATTTTTGCGCGTATTCTCTGTCT
CGCTATTATTCCAACCGCTGTTTGGTCTGCTTTCTGACAACTCGGAACCTGTTTATTGCAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAT
TTCACAAATTTAATTAAGGCCGCGGATCGATCCCGTCGAGCAGTGTGTTTTCAAGAGGAAGCAAAAAGCCTCTCCACCCAGGCTGGAATGTTTCC
ACCCAATGTCGAGCAGTGTGTTTTGCAAGAGGAAGCAAAAAGCCTCTCCACCCAGGCTGGAATGTTTCCACCCAATGTCGAGCAAAACCCCGCCAG
CGTCTTGTCAATTGCGCAATTGCAACAGCAGCATCGCGGGCGGCTGCCAGTCCCAAGGTTCCACTTCGCATATTAAGGTGACCGGTGAGCGTGAACA
CCGAGCGACCTGCAGCCAATATGGGATCGGCCATTGAACAAGATGGATTGCACGCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTCCGCTATGA
CTGGGCAACAACAGCAATCGCTGCTCTGATGCCGCCGTGTTCCGGCTGTCAGCGCAGGGGCGCCCGGTTCTTTTGTCAAGACCGACCTGTCCGCTGC
CCTGAATGAACTGCAGGACGAGGAGCGCGGCTATCGTGGCTGGCCACGACGGCGTTCTCTGCGCAGCTGTGCTCTGACGTTGTCTACTGAAGCGGAA
GGGAACTGGCTGCTATTGGGCGAAGTGGCGGACAGGATCTCTGTACTACCTTGTCTGCGAGAAAGTATCCCATATGGCTGATGGCTGATGGCTGCGG
GGCTGCATACGCTTGTATCCGGCTACCTGCCATTTCGACCACCAAGCGAAACATCGCATCGAGCGAGCAGTACTCGGATGGAAGCCGGTCTTGTGCGAT
CAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCGCCAGCCGAACGTTCGCCAGGCTCAAGGCGCGCATGCCCGACGGCGAGGATCTCGTCTGTA
CCCATGGCGATGCCTGCTTGCCGAATATCATGGTGAAAAATGGCCGCTTTTCTGGATTTCATCGACTGTGGCCGGCTGGGTGTGGCGGACCGCTATCAGG

ACATAGCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCTTCTCGTGCTTTACGGTATCGCCGCTCCCGATTTCGCAGC
GCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGGGGATCGGCAATAAAAAAGACAGAATAAAACGCACGGGTGTGGGTCTTTGTTTCGGATCC
GAATTCTCGAGGGCGCGCCATTTAATGGCCAGCGAGGCGGTACCCAATTGCCCCATATAGTCCACAGAGGAGGACACCTTCTATTTATGTGATTTAT
TTATTATTTATTGACTCAAGAGAAGCAGAAGCTATGCCAGCCTTTGCTTGTGACCCATAACCACTGCCCTGATCCAGGCCACATCTGGAAGGACCAC
TTAGCTAGCCCTGTACCAAAGGGAAAGCTGGGCGTGGTATAAAGCACACCAGGAATCCTAAGCACTCGGCAGAGGGCTGGAAGGTTGCCACAGGTCG
TCAGACAGCCTGGTCTACACAATGAGCTTCAGGGAAGCCAGATGGTGGGATGGGCCCCGAAGGAAGTGGCTTCTCTCTGAATCTCTAGCAACAGTG
CAACACCATCTCTGCCTGAGGCTAATCCCCACGAATGACCCCTGCATCAAGACAGTCTTGCCACAACAGACCTTTCCAGCATGGACCTGCCTTCTCC
CCAATGGGGACCCAGGGCTGTAAAGCCAAACTGGAGACTTAAACTCCCACTCAGAGCCAGGAGCCACCAGGGTAGCACCTGTACTCTGGCTCCACTG
GGTGGAGGGGACTGGGTGCCAGTGGCTTTTGAAGAACCAGATTGGACTAGGCTCAGGGTCTCACTTGTAACATGAGCCACCCAGGGTCCACCCG
GCAGTCACGAGGCCTTCCATGACTGGCCTTCGGGTACCAAACAGGTCAGGGAGTGTGTTCATCCATTGCTGACCACAGTCCCTCCCCAGCCTCAT
TGGAGAAATTTCTTGCTACCAGCTATTAATCATGTTTATTACAGTGAGCAACACCACTGGGGGGGGGAGCAACTCCACAGGCTCAAGCAG
GAGCTGTAGACGCCATGAAGGTACACGACCTCATCTGTACACTGGCATTTGGGTTAACTGGGGTCTCCAGCTGAGGCTGCCTCTCTCACCTCA
CTCGGCTTCTTCGGACCTCTGCGGGTGGCCGGGTGGGGGGTGGTAGGTGGTGTCTGATGGTGCCTCCAACCTGTGGCCGCTCCTTGGGTTTAGGC
TCAATGGGAGTCCACTGCTCACCTCGGATGGCTGCCTGGGGCAGAGGGGGGCTATGTTATGGTTGAAGCTGCTTACTGTCCCTAGGGACTCCAGTGGAC
ATGGGTTGGGGCTGGAGGCACTGATTGCTGCTCTCCAGAAGTCTGTAATCAATACCCAGAAACCACATGGCAAAACCAACCAATTTGTAATGGGAT
CTGATGGCTTTTCTGGTGTCTGTAAGACAGGAATAGTGACTTATCACTGATAAATAAATAAACAATTTCTTTAAAAAAAATGCTGAATGTTGGT
GCACCCGCTTTAATCCAGCACTCGGGAGGCAGAGGCAGGTGGATCTCTGAGTCCGAGGCCAGCCTGGTCTACAGGGTGAGTTCTAAGACAGCCAAA
GCTACACAGAGAAACCCTGTCTCAAAAAGCCAGAATGAATCAATTGACAGATCGATTTCATATCCCACAATGCTCGAGAGATAGAAAGTCTGCAGCAC
AGCACACACCTGTGAGCACACACCTGTGAGCACACACCTGTGAGCACACACCTGTGGTACGCTTCTAACCAACAAACCAGAATATTTTATCCAGAT
GGTAAGAATGGAGCTGGCAGGAAGGACACAGGAGATATCTGTATGACTTGAACACAGAGAAAGGCTTGTAAATGAAAAAAAATGCTGAATGTTGGT
CAGCACATATCTGTCTATCCAGCATCAGGAGACAGAAGCCGGAGGACCAGGAAGATCAGGAGTTCAAAGCCATCTTCAACTACAGAGCAAGTTTGAG
GCTAGTCTGGGCTACATGAGACCCTGCTCTTCTCTCAAAAATAAATAAAGAATAAATAAATAAGATGCTTCTGTGTCATGAGCTCCTGGGAAGTCCAC
CTAACACCACCAAACCTCAGGAGGCTTGGATGAGACATGGGCCCCACAGGAGGCTTGGAGGTGAGCTTGGACCAACCCAGCTGCTTCTCCAGGCCA
CAGTACACCTTCTACAGGAAGTGGCCAGGATACAGCAGAGGATCTGCACACAGCCAAATGGGAGCGAGAAAGCTGCTCCGAGTACGCCAGCCGAC
AAGATCATGAGGGTGGGTGCGGAGGGGAGGCAGACCATTGAGGGCAGCCACTTACCAGCAGATAGATCACACTGGCAATGGCCAAGCAGACGGTCCC
CAGGATGTTGGCCAGGAGGAAGCTGCGAGGCACCGACAACCTTGAGGCATGACAGGAGGAAGCAAACAGATAGCAGTCAGTGGGCATCTGGTCACAC
AGTCCGACAGGGGAGATTCCCTCCCCGGGGCCCTGGACGGGGGATGGGCAGAGGCTAGCTCTCATCAGGTCCAGCTTGGGGTTTGTAGAAAGCTCCTCTT
TGTGACGATGTGCTTTGATTCAAGCCACAGACATCTTGCTGGGAAAGGCCGAGCTGGAGCGTGCCCATATGGGTGTGTCCCCAACTTCCAGGT
GTAACAGCCCAAGTACAGCACTGTGGCTCAGGTGCTAAGCTGTGGTGTGCTGACAGGTTTGGGGCTCTCTAAAGACTTTCTTTTCTTTTCTAAGA
TTTATTTGTTTGTATATGAGTACAGTGTAGCTGTCTGCAGACACACCAGAAGAGAGGGTATCTGATTCTATTACAGATGGTTGTGAGCCCCATGTGGT
TGCTGGGAATTGAACCTCAGGACCTTCTCCAGAGCAGTCACTGCTCCTAACTGCTGAGCAATCTCTCCAGCCCCAAAGCTGAGCTTTTCTATCTGGATAA
ACTTCAATGAAGAAGAGGCTTGGCTGGCTGGGCGATACCTTCTCTCAAGCTATAGACCCATGGGGTGTCTCCTTCTAGTCTTCTGTACCCTGGGGA
TGGACAGAGGGACTCACAGGAAGTGGAGGGCAGCCCGACGTAGTAATTCCTGGTGAGGGCGCCGAAAGCTTACCACAGAGGTCAGTCACTTCTG
TCCACTAGACAGCGGGAAGACAAAACGTCAGAGGGTCAGCACCGACCACACCTAGAAGCCCTTGTCACTCCTTATCTGTCCCCTTCCAGGGTTATGGG
TCCTTTTCTCTCTGGGCACATGAGCCTGGCAGCTGGGCAGGCCTTGGGCTGGGAGCTTGGACGAGTGGGTGTCATGGGGCAGGTCCCCAGGCCTCTC
GGGTAGGAATGACTTACCATCGCTCCATGGTGGACCCCTTTTCTCTTTTCCCCGGGGATCTCCAGCAGACAGATGAGCACACCTGCAGCGCTGCGGT
GAGGTTAAGGAAAGCCATGTCTAGGCTAGGCTGCTGCTCTCTGTTCTCAGGCCCTGGCCTAGGAGTCTACTGTGCAGCAGGGTGGGACAG
AGGGGCAATGGACGCCAGTCCAAGCCTTGGGACCTTGGGCTCAGCTCCACATTTGCCTGAACCCCGTCTGTGGCCTTTGGCAAGGGGGCATCCAGCC
CTGGGCTTGGCCTCTAAAGCTGCAGACGGAGCTGGTCTGTCTCTGGAGGCTGTGGTCAGTCTATGTGTAGCACTCCGTGAACCTGATGTGCTCATGCT
GAGAGCACTCCCATACCCCCACCTTCTCTGGTCCCCAGTAGAAGGATACATAGAGTAGGCGCCGAAATACCACTGTGTGAAACGTTCCAGCAGTAGCCAC
GATCCCCCAAGTGATGAGAACTAAGGATGGAGAGGTGGTTAGGTAGGATCTGTGTCAGGTGTGAGCCAGTCTGAGCTTGCCCCGGGCTTGGGA
CCATCTCCAATTCTCTGCCTACTGGAGCAGAGCATGTGTCAGCAAGGGGTTTCAAGGACAGAGGACACTCAGGAGGTAGCCGCAAGCTGAAGTGA
TCCACCATAGCTGTCCAGTGCTACACCCTGGTTGGAACGTTAACTCTTTTCACTATGCTGTTACCTCTTGGTCTTTTGTAAAGTAGCACATTTCTGGGT
CCATCCCTGTCCGGGGTAGGGGTTGGGAGGGTATAGCTGGGCGCTGGTGGCATTATACCTTCAATCCCAATACTCAGGAGACAGAGGCAGGCAGATG
TCTGTGAGACCAAGGCCAGCCTGGTCTACAGAGGGACTTCCAGGACAGCCAGGGCTACAGAGAAACCCTGTTGGGGGAGGAGGGACAGGGGGAGG
GGAGGAGGAGGGAGAGGGGAGCTTCTCTGCAGTACTATGCTACCCCTACCCCCACTAATGTCTCAGACAGCCGCCCAAGACTTCGTTACAGTAGAAT
TACACGAGCGTTATGCTTGGGTCCCCACACCCATCCCCACCCCGGAACCCACACAACGGGCAACCTCCTTCATTTACAGGAAGTTCTTGTATCTATGCTTT
AGCTCACATGAAGTTGAAGTGAGGTGCTCTGTAAATAATCAGGGGCTCACTCTGGTGTGTTGCTACCGGCTGGTCTGGAACCTCTCGCCCCATGTGTT
TGTGTTGACGGCATGGACCACCTCTCTCTCTTCTTCTGTTTGTGTTTTCGAGACAGGGTTTCTCTGTGTAGCCCTGGCTGTCTGGAATTCA
CTCTGTAGACCAGGCTGGCCTCGAATTCAGTAATCTGCCTCCGCTGCCTCCCAAGTGTCTGGGATTAAAGGCGTGCGCCACCAACCGCCAGCGTGATTG
TGCCTCAAACGAACAAACAAGCAAAGGCTGGAGACATGGCTGGGTGGTGGGGGGCTTGCTAGCACGCACAAAAGTCTCAGTGAACCCCCAGGGC
TGCATAGGCTGGACATGGTACTTGCATGTAATCTCAGCACTTGAAGGGGGAGGCAGGAAGACCGTGAGTCCAAGGCCAGCCTCGCTTACACAGTATG
CTCCAGGAGTGGCTGGGATACATTTAAGTCCCTAGAATCCTAGTACTCAGGGGATGACTGTGGGAGGGCCAGGAATTCAGAGTCATCTTCTGCAACT
AGTGAATCTGAGACCAGCCTGAAACCCCTGTCTCAAAACAAACAGGTAAGCAAAATAAAAAAGTACGAGACCCGTGTTGTAGTTTAGGGAGATTCTGTGACA
CACCAGTGTAAGAAACATCTGAAGATTTTGGTTACAAAAGAACCAGAGAGGTGTGGAGAGATGGCTCAGAGGTTAAGAGCACTGACTGCTCTGGA
AGAGGTCTGAGTTCAATTCCCAGCAACCATGCTGGTGGCTCACAACATCTGTTATGAGATCTGATTTCTCTTCTGCTGTGCTGAAGACAGCTATAG
TGTAATCTCTATATAAAAATAAGTAAATTTTAAAAAGATAGAAGAGCTGGAGCGATAGGTCAATGTTTAAAGAGCTCCGGCCACTCGTCCAAAGTATTG
TTTTTCACTAGGTGTGGCCATGTATGGAATCCAGCACCTTTGAGGCTAAGACAGAAGGATACAGATTTTCAAGGCCCCACACCTGTTTCAAAACAATAA
AAAAAATTTAAGTTTTTAACTACATAAAGATTTTATGTAATAAAAAAATAATATATATATGTTTAAAGGATTTTCAAAGGTAAGTGAAGTATCAAT
GCTACTTTTCAAACAGAAACACGCAGAGTCAAGTTCTCTTCTGCTCTCACATTTGAAAATTAATTTCTCCAGATCTTTAAGGCTACTTATCGCAAGAT
TCCTCGCGGCTGTGGGTGGGCCCTAGGAAGCTCCGCTTTGCTTTTGTCTCCCTAACTGTTTCTCATCTGGCAGTTTCTGTCTCTCTCGACCATCAGCT
CATCTCTGGATTCACTTTCCCTCTCGCTACGGCAACATCCGCTAGCCACCATGCACAGAGGCTCGGTAGCTGAAACACAGCAGGATCTTGCCAGCGGA
GATGTATCTTTTCAATAATCCGATTACACTGCACCGTCTCTGGCATCCACGATAGGTTCTGGAAGCTCTAGCCTGGTAGTAACCCATGACTTTTTCT
CTCTTTGTCTAATTTCACTTTCTGTGGATCCAAGGAGGGATTGTTTCCATTGTTCTGGAAAAAAAAGACTTCTTT