



Lexicon Genetics Incorporated – Genentech Project Materials

Genentech ID:	UNQ6098	Date of Submission:	11-8-04
Lexicon Contract Name:	DNA423	Mutation Type:	X Standard Knock out
LexVision Name:	MAS263N1		☐ Conditional
Reference accessions:	NM_172416	Is this gene X-linked?	No

Required Materials:

☐ pKOS clone DNA(s) __pKOS 46_____

☐ Target Vector DNA __FTV 46_____

☐ Targeted ES Cell DNA __1C6_____

☐ Genomic Map

Southern Blot Analysis: *External/Internal Probe Strategies*

	<u>5' External</u>	<u>3' External</u>
Name of Probe:	11+12	13+14
Restriction Enzyme for Genomic Digest:	EcoRI	EcoRI
Predicted Wild-type Band (kb):	13.9 kb	13.9 kb
Predicted Mutant Band (kb):	7.9 kb	8.2 kb
Probe Size:	328 bp	151 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:	DNA423-17	5' Primer Name:	DNA423-18
3' Primer Name:	DNA423-9	3' Primer Name:	IRESUP-LR
Predicted Wild-type Band (bp):	274 bp	Predicted Wild-type Band (bp):	none
Predicted mutant band (bp)	none	Predicted mutant band (bp)	577 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**

DNA423-11 5' – ACATTGCTACAGAGAAGCGG
 DNA423-12 5' – GAGCATCTCATGACCACAGG
 DNA423-13 5' – TCTACCAAGTAACAGGCTGG
 DNA423-14 5' – AGTTACAGAAGGTGGGAGGG

PCR Genotyping

DNA423-17 5' – ACAGGTCGCAATCAAGATGG
 DNA423-9 5' – TAGAAACTGGTGGCTCTGGG
 DNA423-18 5' – GAACACCTGCCCAAACCATCAGTCTAC
 IRESUP-LR 5' – TGGAAAATAACATATAGACAAACGCACACC

Genomic Sequence Deleted:

GGCTCGGGACGCGGAGCTGGCGCGCAGTAGCGGGTGGCCGTGGCGGTGGCTGCCGGCGCTGCTGCTGCTGCAGCTGCT
GCGGTGGAGGTGCGCCCTGTGCGCGCTCCCCTTACCAGCAGTCGGCACCCAGGCTTTGCGGACCTGCTGTGCGGAGCAG
CAGCTGTTGGAGGTGCAGGACTTGACCCTGTCTTTGCTGCAGGGCGGAGGTCTGGGGCCGCTGTCACTGCTACCTCCGG
ACCTGCCGGATCTGGAGCCTGAGTGCCGGGAGCTGCTGATGGACTTCGCCAATAGCAGCGCCGAGCTGACCGCTGTA
TGGTGCGCAGCGCTCGGCCCCGTGCGCCTCTGCCAGACCTGCTACCCGCTCTTCCAACAGGTCGCAATCAAGATGGACAA
CATCAGCCGAAACATCGGGGTGGGTAGAGGAGCAGCCTCGGCACCTGTGTGTGTGTGTGTGGGGGGGGGGTTTGGGAA
AGTAAGGAAACGGCATTGGACGGTCTGTGGAGTTAG

Genomic Locus: *(The deleted sequence represents nt 9846-10352-in the sequence below. KOS46 used to generate the TV represents nt 3732-11309 in the sequence below.)*

CTCATAACCCTGAAACCAAAGCACGAGGTGGGACTCGAACCCACGATCTTGAAACCTGAAACCAAAGGCACGAGGTG
ATTCTCGGGTGTGAGGGGTGGTGGCGTTTCCCGGCCAATGCACCAAATGAAAGACCCACAACGTGAGGACTCCCCAC
GTTCTGACTCAGAAGAGGCGACACCCCAAAATCACCCACAAGAAACGGTCTTGCTGCAAACCTGCAAGAGGATTTTTAT
TCAAGAGCGCTCTCGGGCCACGGTCATACACCACGAGGGGTAGAGGACCATGGCGCCCCGAGTAGCTGAGTAAGGG
GGTATTTAAAGGAAGAAACCACAACCTCAAGGAGGTGGGAAGGGCGTTGTTGGAAAATACCAAAAATACCAGTTAAGA
GTTACAAGGAAGTGCAAAGTTACAAGAGTCATGAGGAATACCTGGTAATTGTGAGGGTTATTTCTCAAAACAGTTTCTA
AGAGCCCCTAACAAAAGCACATTTGCATAGCGGGTTCCAGCAATGGTCAAGGTGACTTTCTTTGAATGAGCACTCTTTG
AACCTAGGAAGCGGGTGGATAGAGGAATGTCGCTATCTGTTTTATGATTAGCATACCTTTACAAAGGCCACATTTCCAA
GCCTGGGCCTAAAGGTCTAGAATTTTGTTTTTACTTTGTTATACCTTCAGTACCTGAGCCTGATCACCTCTGCCTCCTGCT
CATCCTCTGTGCTTGCCTGGCCTCTCATTCAACATTTTAGTGGGAATTACATGATCTCATTTTCAAACAGGGCTCTCATA
TACAAATACAAATGTGCCAAATGTTTATTAACCTTTACCTTTCCCTAGGGAACTAAACAAATGTCTATTCACTCCAGAT
AGGGCCCCAACATCAGAGCCAAGTAATGATTCCAACCAAGTCCAACCTGGTGGTTCAGTGAGTTTACTGGGTGTCTTAG
CTACTGTTCTATTGCTGTGAGGTGACACCATGACCAAGGAAATCTTATCAAAGAAAGCCTTTAATTGGGGTTTGTCTTA
CATTTTCAGAGGGGAGTCCATGACCTTCGTGGTGGGGAGCATGGCGGCAGACAGGCATGGTGCTACAGTAGCTGAGAG
CTTAAATGTGATCCACAGGCACAAGAGAGGACCCAAGGCAGAGAGGCAGGGCCTGGTGTGCGTTTTTCAAACCTCAAT
ATCCACTCCCAGTGACACACCTAATTCTTCCACTAACTAGAGATGAGTCATTCAAATACATGAACCTGTGAGGGCTGTT
CTCATTCAAACCACCACACTGGGCTTAGTTACAAAGCCTGGGTGAGGGATTAACCTCAGACATGTGGGTGACCACAAA
GTTCCACACCATCACTGCTACGTCCACTCCAGTGAAGTATGCTTGACAGGCTGAGAGGCCTGGAAGCACTCATGAGGC
AGAGTTTCAAGGAACTCAACCTCCTTGGAACCTTGGCATTCTCATAACCCGTATACTCATACCCTATCCCCATGTTAGT
CTGGTTTATGGATGCACGTGCTCTTTTCACTATTGTTTTATTATAAGTGCCTTTAAAGATTGAATTCTGACATAGGTGA
GCCTCCACCAGTGTTCCAATGTCCTAGAAAATCCTTGAAAGCTGATGAGCTTGGAATTCAGTGAGAAGGTTATCTATTCA
GTAACATTCAAATTTACTTCTAGTAGAGATGGTGAACTAATTAGGCATTACAAAGAACAGAGCTGGAATAGCTCAGG
GCTAGTCTGCAGAGTGATTACTTAGGACAGTAGCCAGTCTCACCCAAACAAGGGAATACACAATGGCCTAGCTAATAG
GTGGGTTTACCATGAAAGAGTTAGGGAATCCCCCTGAATCTTCACTACAGCCAGGTATAGCAGGCTACATTGCATATTA
GAAGCAAGTTGGTGAATTCTTCTGACAAATAGAGATTCCCCACAGATACTTTAAAGAACAGCCAAGTTATACTCATGCA
AGAATTTATCAAGGCCTAGGAAATAGGGGGTTTGTGGTATTGCATTATTCATGAGAAGGTCTGCTAGAGCAGAACCCCC
TAGTGCTAGCTTTCACAAGGCTCAAAGGAGTAGCACAAATTGTGACTAGGGTGTGAAATCCTTACCTGTCTATTAGCTGA
CCCTAGGCAGGGCTGTTTTATCTTTACTGTAAATATTACCTGGTTCTTGTAAGTCCCTTTGAAGTCATTCTCTGTTTTGT
GTCAGATAAATTCAATGTATTTGCTGCGCTGCGGTGACATTCTACCCCTTTGTTTCTGTATTATATAAGACTAGGTTGCTCATT
TGTGAAAATACACTCAGATTCTACACACTCTCTCGTGTCTCTTCTGTTTGTTCATTGCTGACTCCTTCGCCCACTTGCCAC
CAGAGACCCGTTCCACACAGATAGGAGACCCAAAAAGGGAATAGTCTGCGGCAACATCACAGATGACAACCCAAGAG
AAGTTGTGTACAGAACCCCACTTTTACTTAAAGTTTGCTTCCTGGAACTCTGACATCCCCCAATATCACTTGACAGTAG
CGGGGTTTAGAGAAAGAGCAATTAGGAGTAATGCTGGACTCACAAATATGGGGCCCTGTGACCCAACCCCTCCGTCCTTCT
ATTAGAGAGCATCACTAGCTCCATTACCATCCCCACAGGCCTAGCTATCACTACACTGTTTAGCTGGACTAGTTGCCAT
GGCTACAGAGCCACTGTCTAATCCAAGATGGTAGTCATGTTATGCCCAAGGAAAAATCGATACTATAGCATTAAATACA
TTTATAACTCACAAATTCAGCATGGGCATGGAGAAAAAGAACTTGGCTGTGCACACCATGTGCGGATGAGCTGCAGC
TGCCACAATCTCAAAGCAATGGGGTCTCTCGGTGGTCTGAAAGCTCCCTGGTGATAAGCCAGAACAAGCCTTCTCAAT
ATGAGCTGGTGTGTCTTGCATATTTGTTACAGTAACAGATGTAGAACATTGCTACAGAGAAGCGGCCATTAGACTGAAC
CAGACTAAGTCACACAGTGTAGAGACTTCCACCAGCACCCCTGGATTTAGAAAAGCCAGGGTGCACCTCATCTGTTTGG
AGTGTCTTCTGAAGGCTCCTTCTCGCTACGGTCCCTCCACATCCAACACAGTGGCCATCTCTCTCTTTTGGAAAGGAGCT
CCTCTGTGTGTTTTAAAGGAACACCCCTCCTCCCTTTAAGGCCCTGCTGCCACCTCTGATGTGATGCATGTCTCTCCTAA
TGCTCACCTGCCTCAAGGCCCAACCATGTTCCCTCCTGTGGTCATGAGATGCTCTCCTGATAAAGCTCATTCTGCTCC
TCCCTCCAACCCACCTCCACCCCTCCTTCCACAGCTCTGATTTCTAATACATTTAACACCATGGCAAAGAATTTGG
ACGTATTTTCATCCATGCCCTGGTACTTTGTGGAAGATTGAGCCTAAAGTTGATGCATTAGTTTACCTGGGAAATTCAGG
AGGAGGCAGCATTTAGGCAGCAGAATATTACCAGCTTCTCTCAGCCAAATATATACTGAGGACCAGGATTACAGAGGA

[illegible]

[illegible]

[illegible]

GAAGAGCAGCCAGGTTTTTGTGTTTTTGTTCCTTTGATTTTTTTAAGATTTATTCATGTATTTTATGTATGTGAGTACACTGT
AGCTGTCTTCAGACACACCAGAAGAGGGCGTCAGATCCCATTACGGATGGTTGTGAGCCACCATGTGGTTGCTGGGAA
TTGAACTCAGGACCTCTGGAAGAACAGTCCCCCCCCCAGCCATCTCTTTGGCTCGAAGCCAGTGTTCTTAACT
GCTGAATCCCCAGTTTCTAAATGGGATTTAAAACAATTTGAATTTTTTGTGACAGGGTTTCATGTAGTCCATGCTGGCCT
TAACTCACTGTGTATTACAGCTGGCCTTGAACTTTTTTTTCTTTTTGTTTTTCGAGACAGGGTTTCTCTGTGTTGCC
TGA CTGTCTGGA ACTCACTCTGTAGACCAGGCTGGCCTTGA ACTCAGAAACCCGCTACCTCTGCCTCCCAAATGCTG
GGACGAAAGGCGTGCGCCACCACGCCCCGCTTGGTCTTCCTCTTCTGGTCTTCCTGCTCCACCTCCCTGGTGCTAGGGTT
GTACTGTGTGCACTTTTTGTTCTCTGAGCCATTGTATCTTGAAAATACTGCTCTGACTCGGGAGATTATCATCTCCTGATT
AGAATCAATTAACAAGCCAGGCAAAAGAACTAAAAGCTCAGGTGCGGTTTGGGATGGGGTAGGTCAGCTGAAGGGT
GGAGAAGGATGACTTCATTTTCATTTCGGTTCTGACCTTCATCCAGAGGAGGTAAATTTACCTGCTTTGGACTTTATGCAT
TTAATTTCCCACTCAAAACTCTAGAAAACGTAGAAGCTCCCAGAATGTTCCGATTAGGGGATGAAATCAGAAGGAACCA
AATGCTTTCTTTTTCCAGGATTTTGCAATTA AAAACCTGATCCAATTCATTGCTTTAATCTTATTTTAAAGTGTTCCACGAT
TTCTGTGTTGAATTTTAAATGGAATTGAAAGAGTTTTAAGAGCCTGAACTCATTAAATTTCACTCTTTTTTCTGGTTTATT
CAATAACAGCATTCTTTTTCCCCCTCTTTCTCTGTCTGTCTCTCTCTCTCTTTTTCCCCCTTTTAGTCTCAGACTAATTCCT
TAGATTTCTTCACTGCTATTTTCCTTAGAGTTGGCACCCAATGTGATCATTTGAAAGATTCAATTTATTATATGTACATGAG
TGTTCTATCTGCATGTACGTCTACATGCATGTCTGCATGCCAGAAGAGGACCTCAGATCCCAGTATAGAAGCTTGTGAG
CCATCTCTCCAGCACCTCTGTGATCATTTTAACCAGACTCTTTGCCAAGTGTGCAAGCATTCTAATTTGTGGTCTCTGCA
CACCTGGCTCATGAAGATAGCAGGAACTTATCTTTAAAAAATTACAAAGTTTAAACGAAATGTGTAGTGTTGGGTTTT
AGGTGAGAGGCAGAGCGCTTGCGTGAAGCCCTGGGCTCCGCTCCAGCTCCAAAAACAAAACAAAAAAGAGCCACA
TTTATCAGAATGTCACAAAGCATTCTTGCTTGCTTTAGACAGTCTAGTGAGACACTGGGAACATGAGAAAGAAATCTG
AGGAAGAGCAAAGGTGGGAGCGAGCAGGATGGTTAAGTGTCTCCAGTTAGGATCCTCACAGCCCCTATCTGTGTGAG
CATCAGGCAGGCAGCTCTCAGCGTGATAAGGAGGTGGGCTTACATGAATGGCAGGCGAAGAGTCAGGAGCAGATCC
ACGGGGTGTGATCGTTCGTCTGCATTCTGCTGTGTAGGATGTGTGTATGGCGGAAGCTCATTGTTATTACTAAAGAATC
CAAGAGCCAGTGTTAGCATGTATAAAGGAAGAGTTTCAATAGACTCCCAGCTTAACCTGGAGTTAGTCTTCTCCTTCTA
TCACGTGGGTCCCTGGGACTCCACCTCAGGTCAGTAGGCTTGGCACCCAGCCAT

Selection Cassette:

GGCCGCTCTAGAGGCCATAGCGGCCATTTAAATGGCGCGCCGGATCCGAATTCCTCGAGGCTAGAACTAGCGATAAGC
TTCGAGCGGGATCAATTCCGCCCCCCCCCTAACGTTACTGGCCGAAGCCGCTTGGAATAAGGCCGGTGTGCGTTTGTCT
ATATGTTATTTTCCACCATATTGCCGTCTTTTGCCAATGTGAGGGGCCGGAAACCTGGCCCTGTCTTCTTGACGAGCATT
CCTAGGGGTCTTTCCCTCTCGCCAAAGGAATGCAAGGTCTGTTGAATGTCGTGAAGGAAGCAGTTTCTCTGGAAGCTT
CTTGAAGACAAACAACGTCTGTAGCGACCTTTGCAGGCAGCGGAACCCCCACCTGGCGACAGGTGCCTCTGCGGCC
AAAAGCCACGTGTATAAGATACACCTGCAAAGGCGGCACAACCCCACTGCCACGTTGTGAGTTGGATAGTTGTGAAA
GAGTCAAATGGCTCTCCTCAAGCGTATTCAACAAGGGGCTGAAGGATGCCAGAAGGTACCCCATTTGTATGGGATCTG
ATCTGGGGCCTCGGTGCACATGCTTTACATGTGTTTAGTCGAGGTTAAAAAACGTCTAGGCCCCCGAACACGGGGA
CGTGTTTTCTTTGAAAAACACGATAATACCATGGGGGATCCCGTCGTTTTACAACGTCGTGACTGGGAAAACCTGG
CGTTACCCAACTTAATCGCCTTGCAGCACATCCCCCTTTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGC
CCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGCTTTGCCTGGTTTCCGGCACCGAAGCGGTGCCGAAAGCT
GGCTGGAGTGCATCTTCCTGAGGCCGATACTGTCGTCGCTCCCTCAAACCTGGCAGATGCACGGTTACAGTGCGCCAT
CTACACCAACGTGACCTATCCCATTCAGGTCATCCGCGCTTTGTTCCACGGAGAATCCGACGGGTTGTTACTCGCTC
ACATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGCGAATTATTTTGTATGGCGTTAACTCGGCGTTTCATC
TGTGGTGCAACGGGCGCTGGGTGCGTTACGGCCAGGACAGTCGTTTGCCGTCTGAATTTGACCTGAGCGCATTTTTACG
CGCCGGAGAAAACCGCCTCGCGGTGATGGTGCTGCGCTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCG
GATGAGCGGCATTTTCCGTGACGTCTCGTTGCTGCATAAACCGACTACACAAATCAGCGATTTCCATGTTGCCACTCGC
TTTAATGATGATTTTACGCCGCGCTGTACTGGAGGCTGAAGTTCAGATGTGCGGCGAGTTGCGTGACTACCTACGGGTAA
CAGTTTCTTTATGGCAGGGTGAAACGCAGGTGCGCAGCGGCACCGCGCCTTTCCGGCGGTGAAATTATCGATGAGCGTGG
TGGTTATGCCGATCGCGTCACACTACGTCTGAACGTCGAAAACCCGAAACTGTGGAGCGCCGAAATCCCGAATCTCTAT
CGTGCGGTGGTTGAACTGCACACCGCCGACGGCACGCTGATTGAAGCAGAAGCCTGCGATGTCGGTTTCCGCGAGGTG
CGGATTGAAAATGGTCTGCTGCTGCTGAACGGCAAGCCGTTGCTGATTCGAGGCGTTAACCGTCACGAGCATCATCCTC
TGCATGGTCAGGTCATGGATGAGCAGACGATGGTGACGATATCCTGCTGATGAAGCAGAACAACTTTAAACGCCGTGC
GCTGTTGCGATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTACGGCCTGTATGTGGTGGATGAAGCCAA
TATTGAAACCCACGGCATGGTGCCAATGAATCGTCTGACCGATGATCCGCGCTGGCTACCGCGCATGAGCGAACGCGT
AACGCGAATGGTGCAGCGCGATCGTAATCACCCGAGTGTGATCATCTGGTCGCTGGGGAATGAATCAGGCCACGGCGC
TAATCACGACGCGCTGTATCGCTGGATCAAATCTGTGATCCTTCCCGCCCGGTGCAGTATGAAGGCGGCGGAGCCGAC
ACCACGGCCACCGATATTATTTGCCCGATGTACGCGCGCGTGATGAAGACCAGCCCTTCCCGGCTGTGCCGAAATGGT
CCATCAAAAAATGGCTTTTCGCTACCTGGAGAGACGCGCCCGCTGATCCTTTGCGAATACGCCACGCGATGGGTAACA
GTCTTGGCGGTTTCGCTAAATACTGGCAGGCGTTTCGTCAGTATCCCCGTTTACAGGGCGGCTTCGTCTGGGACTGGGT
GGATCAGTCGCTGATTAAATATGATGAAAACGGCAACCCGTGGTCGGCTTACGGCGGTGATTTTGGCGATACGCCGAA

CGATCGCCAGTTCTGTATGAACGGTCTGGTCTTTGCCGACCGCACGCCGCATCCAGCGCTGACGGAAGCAAAACACCA
GCAGCAGTTTTTCCAGTTCCGTTTATCCGGGCAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAAC
GAGTCTCTGCACTGGATGGTGGCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAAGTGCCTCTGGATGTCGCTCCACAA
GGTAAACAGTTGATTGAACTGCCTGAACTACCGCAGCCGGAGAGCGCCGGGCAACTCTGGCTCACAGTACGCGTAGTG
CAACCGAACGCGACCGCATGGTCAGAAGCCGGGCACATCAGCGCCTGGCAGCAGTGGCGTCTGGCGGAAAACCTCAGT
GTGACGCTCCCCGCCGCTCCACGCCATCCCGCATCTGACCACCAGCGAAATGGATTTTTGCATCGAGCTGGGTAATA
AGCGTTGGCAATTTAACCGCCAGTCAGGCTTTCTTTACAGATGTGGATTGGCGATAAAAAACAACCTGCTGACGCCGCT
GCGCGATCAGTTCACCCGTGCACCGCTGGATAACGACATTGGCGTAAGTGAAGCGACCCGCATTGACCCTAACGCCTG
GGTCGAACGCTGGAAGGCGGCGGGCCATTACCAGGCCGAAGCAGCGTTGTTGCAGTGCACGGCAGATACACTTGCTGA
TGCGGTGCTGATTACGACCGCTCACGCGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGGAAAACCTACCGGATT
GATGGTAGTGGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACACCGCATCCGGCGCGGATTGGCCTG
AACTGCCAGCTGGCGCAGGTAGCAGAGCGGGTAAACTGGCTCGGATTAGGGCCGCAAGAAAACCTATCCCGACCGCCTT
ACTGCCGCTGTTTTGACCGCTGGGATCTGCCATTGTGACACATGTATACCCCGTACGTCTTCCCGAGCGAAAACGGTC
TGCGCTGCGGGACGCGCAATTGAATTATGGCCACACCAAGTGGCGCGGCGACTTCCAGTTCAACATCAGCCGCTACA
GTCAACAGCAACTGATGGAAACCAGCCATCGCCATCTGCTGCACGCGGAAGAAGGCACATGGCTGAATATCGACGGTT
TCCATATGGGGATTGGTGGCGACGACTCCTGGAGCCCGTCAGTATCGGCGGAATTCCAGCTGAGCGCCGGTCTGCTACC
ATTACCAGTTGGTCTGGTGTGACGGGATCCCCGGGCTGCAGCCAATATGGGATCGGCCATTGAACAAGATGGATTGC
ACGCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTCGGCTATGACTGGGCACAACAGACAATCGGCTGCTCTGATGC
CGCGTGTTCCGGCTGTGACGCGAGGGGCGCCCGTTCTTTTTGTCAAGACCGACCTGTCCGGTGCCCTGAATGAACTG
CAGGACGAGGCAGCGCGGCTATCGTGGCTGGCCACGACGGGCGTTCCTTGCGCAGCTGTGCTCGACGTTGTCACTGAA
GCGGGAAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCCTGTGCTCATCTCACCTTGCTCCTGCCGAGAAA
GTATCCATCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTGACCAACCAAGCGAAAC
ATCGCATCGAGCGAGCACGTACTCGGATGGAAGCCGGTCTTGTGATCAGGATGATCTGGACGAAGAGCATCAGGGGC
TCGCGCCAGCCGAACCTGTTCCGCCAGGCTCAAGGCGCGCATGCCCGACGGCGAGGATCTCGTCTGACCCATGGCGATG
CCTGCTTGCCGAATATCATGGTGGAAAATGGCCGCTTTTCTGGATTTCATCGACTGTGGCCGGCTGGGTGTGGCGGACCG
CTATCAGGACATAGCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCTTCCTCGTGCTT
TACGGTATCGCCGCTCCCGATTTCGACGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGGGGATCAATTCTC
TAGAGCTCGCTGATCAGCCTCGACTGTGCCTTCTAGTTGCCAGCCATCTGTTGTTTGGCCCTCCCCCGTACCTTCCTTGA
CCCTGGAAGGTGCCACTCCCACTGTCTTTCCTAATAAAATGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTCATTCT
ATTCTGGGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGT
GGGCTCTATGGCTTCTGAGGCGGAAAGAACCAGCTGGGGCTCGATCCTCTAGAGTCGAGTACCGGGTAGGGGAGGCGC
TTTTCCCAAGGCAGTCTGGAGCATGCGCTTTAGCAGCCCCGCTGGGCACCTTGGCGCTACACAAGTGGCCTCTGGCCTCG
CACACATTCCACATCCACCGGTAGGCGCCAACCGGCTCCGTTCTTTGGTGGCCCCCTTCGCGCCACCTTCTACTCCTCCCC
TAGTCAGGAAGTTCCCCCCCCGCCCCGAGCTCGCGTCTGTCAGGACGTGACAAATGGAAGTAGCACGTCTCACTAGTCT
CGTGACAGATGGACAGCACCGCTGAGCAATGGAAGCGGGTAGGCCTTTGGGGCAGCGGCCAATAGCAGCTTTGCTCCTT
CGCTTTCTGGGCTCAGAGGCTGGGAAGGGGTGGGTCCGGGGGCGGGCTCAGGGGCGGGCTCAGGGGCGGGGCGGGCG
CCCGAAGGTCTCTCCGAGGCCCCGGCATTCTGCACGCTTCAAAAGCGCACGTCTGCCGCGCTGTTCTCCTCTTCCTCATCT
CCGGGCCCTTTCGACCTGCACTGCGCGCCAGCTTACCATGACCGAGTACAAGCCACGGTGCGCCTCGCCACCCGCGACG
ACGTCCCCAGGGCCGTACGCACCCTCGCCGCGCGTTCGCCGACTACCCCGCCACGCGCCACACCGTCGATCCAGACCG
CCACATCGAGCGGGTCACCGAGCTGCAAGAACTCTTCCTCACGCGCGTCTGGGCTCGACATCGGCAAGGTGTGGGTGCG
GGACGACGGCGCAGCAGTGGCGGTCTGGACCACGCCGAGAGCGTGAAGCGGGGGCGGTGTTGCGCGAGATCGGCC
CGCGCATGGCCGAGTTGAGCGGTTCCCGGCTGGCCGCGCAGCAACAGATGGAAGGCCTCCTGGCGCCGCACCGGCCCA
AGGAGCCCGCGTGGTTCTGGCCACCGTCGGTGTCTCGCCCGACCACCAGGGCAAGGGTCTGGGCAGCGCCGTCGTGC
TCCCCGAGTGGAAGGCGCCGAGCGCGCCGGGTGCCCGCCTTCTGGAGACCTCCGCGCCCCGCAACCTCCCCCTTCTA
CGAGCGGCTCGGCTTACCGTCAACGCCGACGTGAGGTGCCGAAGGACCGCGCACCTGGTGCATGACCCGCAAGCC
CGGTGCCTGACGCCCCGCCACGACCCGACGCGCCGACCAGAAAGGAGCGCACGACCCCATGCATCGATGATCTAGAG
CTCGCTGATCAGCCTCGACTGTGCCTTCTAGTTGCCAGCCATCTGTTGTTTGGCCCTCCCCCGTGCCTTCCTTGACCCTGG
AAGGTGCCACTCCCCTGTCTTTTCTAATAAAATGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTCATTCTATTCTG
GGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTC
TATGGCTTCTGAGGCGGAAAGAACCAGCTGATTACCCTGTTATCCCTACTCGACCTCGAGGGCGCGCCATTTAATGGCC
AGCGAGGCCGGTACCCAATTGCCCCATAG

Targeted Locus:

GATCTTCAGGCTATCCCAGCAATTGGCCAGCACCTCACTCAGGCAGGCCAGAAAATGAAGAAATGAAAATTTGCTTCA
GACTCTTTGGGGATGAGTCTTTGACCCAGAGCCACAGAAAGCCCTCCTTATCAGACAGTCTAGGTCTGTCTTTGGGT
ATGTGCATTTGGCAAGGCAACCAGGTGCTATTATGGTACAGCCTGCACAGTGTGAAGAGACTGGGGTAGCAGAATCA
ACTCCATTTTGCTTCTAAGACTCTACTCTGAGTTAACTTGCCCTTAGAGAGGCATGGCCCCACCCTTGATGTCTGAGAA

[illegible]

ATTATGGTTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCTCATGTCTCTGGGTGACAGAATGCTTGCTTGCTTAGCAC
ACACCAGGCCCTGGGTTTGGTCTCCAGCACCAACACCTGGCAATGGGGGTACATGGTGGCACTTTCAGCAGGGAG
GCAGGAAGATCAGAATTTCAAGGCCATTCTCTGGTATAGCGCAAACATGTTTCTTAGTGTGTTAGAGAACTAGCCTGAG
TTACATGAGGCTTGTCTCCAAGAAGAAAAATACCTATATGTATTAATATTATATAATGTATACATATTTATTATCATAAC
ATATATTATACATTACATAATATACAATATAACATATTACAACATATCATAAAATGCTACGTGTCACATATTACATGTTA
TATATTAATATTACATATTATGTTACAATATGTTATGTAATATATGGTATAATAATCGTATAATATAGAATATATAATAA
TAACATAGTGGGGTATGCTCAAGTGTATGTATTAGGTAGGATTTCTATTGCGCTAAAACACTACACCCAGATCCGAGCC
GTACACAGGTGTCAGTGTAGTATGTTTAAATTAAGTGACATTGGACAATTAGTTCTATCATSGTAKTAGCTAC
AATTCAAGGGTTCAGCTGCTACATGTGGGTAGTGGCTYCCCTATTAATAAGACGTGGACTATATTCATCACCCCAGGA
AGTTCTGTTCCGGGTAGATAGTTGAGAATTAATAATCAATCAAGCCTTTTGAAGCCACAAGTTCCAAAACCCAGAAC
TGCCAAACCGATGTTATCCACTCTCCAGAGGAGATGAAGAAATTTTACTAATCCAGAGCCAATGAAAATGAACACCTGC
CCAAACCATCAGTCTACTGGGTTTTTCTGGGAGTCACTCGGCAGTCACTCTCCCTGGAGTTCCAGCAACCAGAACAAAC
TCCACAGGCTCATGGAAGGCGGGGAAGTGCAGGGTGCAGAGCGTGCAAGACGAAACTTCCACAGGCTTCCTTGGAAGG
CGGGGAAGTGCAGGGTGCAGAGCGTGACAGGACGGAGGCTGGGATGCACCGGAGTTGCTGCAGCTCTACAGACCTCC
AAGCTCGGGCGCGCTCACAGCCGCGCGCTCCGGAGGCAGGTGGGCGGGGCGGTGACGCACTCACCTCGTGACTCCAC
TCAGGGCCTGCGCCGGCCGAAGCCGGAAGCGGCTGCTGTCGGAAGCACCGGGCGAGCTATCTGTTACAGTCCGGCCGG
GGATGGCCGCTCTAGAGGCCATAGCGCCATTAAATGGCGCGCCGGATCCGAATTCCTCGAGGCTAGAACTAGCGAT
AAGCTTCGAGCGGGATCAATTCGCCCCCCCCCTAACGTTACTGGCCGAAGCCGCTTGAATAAGGCCGGTGTGCGTTT
GTCTATATGTTATTTTCCACCATATTGCCGTCTTTTGGCAATGTGAGGGCCCGGAAACCTGGCCCTGTCTTCTTGACGAG
CATTCTAGGGGTCTTTCCCTCTCGCCAAAGGAATGCAAGGTCTGTTGAATGTCGTGAAGGAAGCAGTTCTCTGGAA
GCTTCTTGAAGACAAACAACGTCTGTAGCGACCTTTGCAGGCAGCGGAACCCCCACCTGGCGACAGGTGCCTCTGC
GGCCAAAAGCCACGTGTATAAGATACACCTGCAAGGCGGCACAACCCCAGTGCCACGTTGTGAGTTGGATAGTTGTG
GAAAGAGTCAAATGGCTCTCTCAAGCGTATTCAACAAGGGGCTGAAGGATGCCAGAAGGTACCCATTGTATGGGA
TCTGATCTGGGGCCTCGGTGCACATGCTTTACATGTGTTTAGTCGAGGTTAAAAAACGTCTAGGCCCCCGAACCACG
GGGACGTGGTTTTCTTTGAAAAACACGATAATACCATGGGGGATCCCGTCGTTTTACAACGTCTGACTGGGAAAACC
CTGGCGTTACCCAACTTAATCGCCTTGCAACACATCCCCCTTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGA
TCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGCGAATGGCGCTTTGCCTGGTTTTCCGGCACCAGAAGCGGTGCCGGAA
AGCTGGCTGGAGTGCGATCTTCTGAGGCCGATACTGTGCTCGTCCCCTCAAACCTGGCAGATGCACGGTTACGATGCGC
CCATCTACACCAACGTGACCTATCCATTACGGTCAATCCGCCGTTTGTTCACCGGAGAATCCGACGGGTTGTTACTC
GCTCACATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGCGAATTATTTTTGATGGCGTTAACTCGGCGTTT
CATCTGTGGTGCAACGGGCGCTGGGTGCGTTACGGCCAGGACAGTCGTTTGCCGTCTGAATTTGACCTGAGCGCATTTT
TACGCGCCGGAGAAAACCGCCTCGCGGTGATGGTGTGCTGCGCTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGT
GGCGGATGAGCGGCATTTTCCGTGACGTCTCGTTGCTGCATAAACCGACTACACAAATCAGCGATTTCCATGTTGCCAC
TCGCTTTAATGATGATTTACGCCGCGCTGTACTGGAGGCTGAAGTTTCAGATGTGCGGCGAGTTGCGTGACTACCTACGG
GTAACAGTTTTCTTTATGGCAGGGTGAAACGCAAGTTCGCCAGCGCACCGCCTTTCCGGCGGTGAAATTATCGATGAGC
GTGGTGGTTATGCCGATCGCGTCACACTACGTCTGAACGTGCAAAACCCGAACTGTGGAGCGCGGAAATCCCCGATC
TCTATCGTGCGGTGGTTGAACTGCACACCGCCGACGGCAGCTGATTGAAGCAGAAGCCTGCGATGTGCGTTTCCGCGA
GGTGCGGATTGAAAATGGTCTGCTGCTGCTGAACGGCAAGCCGTTGCTGATTTCGAGGCGTTAACCGTCAAGCATCAT
CCTCTGCATGGTCAGGTCATGGATGAGCAGACGATGGTGCAGGATATCCTGCTGATGAAGCAGAACAACCTTTAACGCC
GTGCGCTGTTTCGATTATCCGAACCATCCGCTGTGGTACACGCTGTGCGACCGCTACGGCCTGTATGTGGTGGATGAAG
CCAATATTGAAACCCACGGCATGGTGCCAATGAATCGTCTGACCGATGATCCGCGCTGGCTACCGGCGATGAGCGAAC
GCGTAACGCGAATGGTGCAGCGCATCGTAATACCCGAGTGTGATCATCTGGTCGCTGGGGAATGAATCAGGCCACG
GCGTAATCAGCAGCGCTGTATCGCTGGATCAAATCTGTGATCCTTCCCGCCCGGTGCAGTATGAAGGCGGCGGAGC
CGACACCACGGCCACCGATATTATTTGCCCGATGTACGCGCGCGTGGATGAAGACCAGCCCTTCCCGGCTGTGCCGAA
ATGGTCCATCAAAAAATGGCTTTTCGCTACCTGGAGAGACGCGCCCGCTGATCCTTTGCGAATACGCCACGCGATGGGT
AACAGTCTTGGCGGTTTCGCTAAATACTGGCAGGCGTTTCGTCAGTATCCCCGTTTACAGGGCGGCTTCGTCTGGGACT
GGGTGGATCAGTCGCTGATTAAATATGATGAAAACGGCAACCCGTGGTTCGGCTTACGGCGGTGATTTTGGCGATACGC
CGAACGATCGCCAGTTCTGTATGAACGGTCTGGTCTTTGCCGACCGCACGCGCATCCAGCGCTGACGGAAGCAAAAC
ACCAGCAGCAGTTTTTCCAGTTCCGTTTATCCGGGCAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGA
TAACGAGCTCCTGCACTGGATGGTGGCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAAGTGCCTCTGGATGTGCTCC
ACAAGGTAAACAGTTGATTGAACTGCCTGAACTACCGCAGCCGGAGAGCGCCGGGCAACTCTGGCTCACAGTACGCGT
AGTGCAACCGAACGCGACCGCATGGTCAGAAGCCGGGCACATCAGCGCTGGCAGCAGTGGCGTCTGGCGGAAAACC
TCAGTGTGACGCTCCCCGCGCGTCCCACGCCATCCCGCATCTGACCACCAGCGAAATGGATTTTTGCATCGAGCTGGG
TAATAAGCGTTGGCAATTTAACCGCCAGTCAGGCTTTCTTTACAGATGTGGATTGGCGATAAAAAACAACCTGCTGACG
CCGCTGCGCGATCAGTTCACCCGTGCACCGCTGGATAACGACATTGGCGTAAGTGAAGCGACCCGCATTGACCCTAAC
GCCTGGGTGCAACGCTGGAAGGCGGCGGGCCATTACCAGGCCGAAGCAGCGTTGTTGCAGTGCACGGCAGATACACTT
GCTGATGCGGTGCTGATTACGACCGCTCACGCGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGGAACCTAC
CGGATTGATGGTAGTGGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACACCGCATCCGGCGCGGATT
GGCTGAACTGCCAGCTGGCGCAGGTAGCAGAGCGGGTAACTGGCTCGGATTAGGGCCGCAAGAAAACCTATCCCGAC

CGCCTTACTGCCGCCTGTTTTGACCGCTGGGATCTGCCATTGTCAGACATGTATACCCCGTACGTCTTCCCGAGCGAAA
ACGGTCTGCGCTGCGGGACGCGCGAATTGAATTATGGCCACACCAAGTGGCGCGGCGACTTCCAGTTCAACATCAGCC
GCTACAGTCAACAGCAACTGATGGAACACAGCCATCGCCATCTGCTGCACGCGGAAGAAGGCACATGGCTGAATATCG
ACGGTTTCCATATGGGGATTGGTGGCGACGACTCCTGGAGCCCGTACGTATCGGCGGAATTCAGCTGAGCGCCGGTGC
CTACCATTACCAGTTGGTCTGGTGTGAGGGGATCCCCGGGCTGCAGCCAATATGGGATCGGCCATTGAACAAGATGG
ATTGCACGCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTCGGCTATGACTGGGCACAACAGACAATCGGCTGCTCT
GATGCCCGCGTGTTCCGGCTGTCAGCGCAGGGGCGCCCGGTTCTTTTTGTCAAGACCGACCTGTCCGGTGCCCTGAATG
AACTGCAGGACGAGGCAGCGCGGCTATCGTGGCTGGCCACGACGGGCGTTCCTTGCGCAGCTGTGCTCGACGTTGTCA
CTGAAGCGGGAAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCCTGTCATCTCACCTTGCTCCTGCCGA
GAAAGTATCCATCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTTCGACCACCAAGCG
AAACATCGCATCGAGCGAGCACGTACTCGGATGGAAGCCGGTCTTGTCTGATCAGGATGATCTGGACGAAGAGCATCAG
GGGCTCGCGCCAGCCGAACGTTCGCGAGGCTCAAGGCGCGCATGCCCGACGGCGAGGATCTCGTCGTGACCCATGGC
GATGCCTGCTTGCCGAATATCATGGTGAAAAATGGCCGCTTTTCTGGATTTCATCGACTGTGGCCGGCTGGGTGTGGCGG
ACCGCTATCAGGACATAGCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCTTCCTCGT
GCTTTACGGTATCGCCGCTCCCGATTTCGACGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGGGGATCAAT
TCTCTAGAGCTCGCTGATCAGCCTCGACTGTGCCTTCTAGTTGCCAGCCATCTGTTGTTTGCCCTCCCCCGTACCTTCCT
TGACCCTGGAAGGTGCCACTCCCCTGTCCTTTTCTAATAAAATGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTCA
TTCTATTCTGGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATG
CGGTGGGCTCTATGGCTTCTGAGGCGGAAAGAACCAGCTGGGGCTCGATCCTCTAGAGTCGAGTACCGGGTAGGGGAG
GCGCTTTTCCCAAGGCAGTCTGGAGCATGCGCTTTAGCAGCCCCGCTGGGCACTTGGCGCTACACAAGTGGCCTCTGGC
CTCGCACACATTCCACATCCACCGGTAGGCGCCAACCGGCTCCGTTCTTTGGTGGCCCCCTTCGCGCCACCTTCTACTCCT
CCCCTAGTCAGGAAGTTCCCCCCCCGCCCGCAGCTCGCGTCGTGCAGGACGTGACAAATGGAAGTAGCACGTCTCACT
AGTCTCGTGCAGATGGACAGCACCGCTGAGCAATGGAAGCGGGTAGGCCTTTGGGGCAGCGGCCAATAGCAGCTTTGC
TCCTTCGCTTTCTGGGCTCAGAGGCTGGGAAGGGGTGGGTCCGGGGGCGGGCTCAGGGGCGGGCTCAGGGGCGGGGCG
GGCGCCCGAAGGTCTCCGGAGGCCCCGGCATTCTGCACGCTTCAAAAGCGCACGTCTGCCGCGCTGTTCTCCTCTCCT
CATCTCCGGGCCTTTCGACCTGCACTGCGCGCCAGCTTACCATGACCGAGTACAAGCCCACGGTGCGCCTCGCCACCCG
CGACGACGTCCCCAGGGCCGTACGCACCCTCGCCGCCGCGTTCGCCGACTACCCCGCCACGCGCCACACCGTCGATCCA
GACCGCCACATCGAGCGGGTCACCGAGCTGCAAGAACTCTTCCTCACGCGCGTCGGGCTCGACATCGGCAAGGTGTGG
GTCGCGGACGACGGCGCAGCAGTGGCGGTCTGGACCACGCCGGAGAGCGTCGAAGCGGGGGCGGTGTTCCGCCGAGAT
CGGCCCCGCGCATGGCCGAGTTGAGCGGTTCCCGGCTGGCCGCGCAGCAACAGATGGAAGGCCTCTGGCGCCGCACCG
GCCCAAGGAGCCCGCGTGTTCTTGCCACCGTCGGTGTCTCGCCCGACCACCAGGGCAAGGTCTGGGCAGCGCCGT
CGTGCTCCCCGGAGTGAGGCGGGCCGAGCGCGCCGGGTGCCCGCCTTCTTGAGACCTCCGCGCCCCGCAACCTCCC
CTTCTACGAGCGGCTCGGCTTCACCGTCACCGCCGACGTGAGGTGCCCCGAAGGACCGCGCACCTGGTGCATGACCCG
CAAGCCCGGTGCCTGACGCCCCGCCCCACGACCCGCGAGCGCCCGACCAGAAAGGAGCGCACGACCCCATGCATCGATGAT
CTAGAGCTCGCTGATCAGCCTCGACTGTGCCTTCTAGTTGCCAGCCATCTGTTGTTTGCCCTCCCCCGTGCCTTCCTTG
ACCCTGGAAGGTGCCACTCCCCTGTCCTTTTCTAATAAAATGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTCATT
CTATTCTGGGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCG
GTGGGCTCTATGGCTTCTGAGGCGGAAAGAACCAGCTGATTACCCTGTTATCCCTACTCGACCTCGAGGGCGCGCCATT
TAATGGCCAGCGAGGCCGGTACCCAATTCCGCCCTATAGGGTATCAGAAACAAGCGGGTGACTTTAGGGGCTTATGGCT
TGGAATGCTGTCCCCCTGGATGCTGTAAACCGGCATCTTCTTGGGACAGGTTTGCTGGAACATTGCAGCGAACATACC
CAGAGCCACCAGTTTCTATCAGTGTGACCTTTATTATTTTTCAAAGTATTGAGTTCCGTTCCATCCTGTTTATCAGCTTGT
TCTCTGGCAAGTTAGTGACATTCTCTGCTTGTCTTCTCATCCGAAAGTGGGGACAAAGAGAGGCCACACAAAAGCTGAC
ATACAGTAATAGTTCGTGGTCCGTGAGTTGCCATTTTAGGATAGTCTGCCTTCTCTGTAACCTCGAGAGCTTTCCTGGTCA
CTTGGAAGGTAAATGTGAAGGACTTAATGAAGGCAAACCAAAAAGAGGAAGACACAGTCTTTGCCTCTAAGAACTGTATA
AATTAGGAAAGGATTACGGTGTGCGCCACCGTGAGAGTCACAGGGTTGCCTGGTAAAGGAAAAATAAGGAGGACACA
GGAATTGGGGGTGGAATGGTTCTTGCCTCCTGAGGGGCCAAGTAGTCTCATGAAAAATGTGGTTTCAGTTGCTTTAGA
GGTCGTAATTGACTAAACTAAATAGAAATGTCTATAGGTGCATCTTGTTTTTAATCTAGCCTAATGTTACTAAGCATATT
TTTTTTTTGTAAATGGGGACATTCATTTGCATTAAGTAAAGTCCAGAGTCACTCTTTGTGGAAAGAACTGTCTTTCAAGG
CAGTTAATTACATGCAGAAATTTCCAGATTGCGCCTTTCTCTATGACTTTAATATGCATGTGTTATATTTGATTTTGAG
CAGTTACATTAATAAACTGTTTTTAGGGAGTCTTTTCATTCTACTTTAATTAATTAATGTATTTATTTGTAATGAAGTT
TCTTGTCGCCCTGACTGGCCTTGAACCTACCGTGTAGGAGAGGATC