支持信息S1。智人的基准数据集。 它由一个正数据集和一个负数据集组成。前者包含2,273 核小体形成DNA片段,后者包含2,300个 核小体抑制DNA片段。这些片段的长度为147-bp。 下面列出了2,273个核小体形成DNA序列

## Supporting Information S1. The benchmark dataset for *H. sapiens*.

It consists of a positive dataset and a negative dataset. The former contains 2,273 nucleosome-forming DNA segments, while the latter contains 2,300 nucleosome-inhibiting DNA segments. Each of these segments is 147-bp long.

## I. Listed below are 2,273 nucleosome-forming DNA sequences

 $\label{eq:GGTAGAAAAGGAAATATCTTCATATAAACACAAGACAGAAGCATTCTCAGAAACTATTTTGTGATGTG\\ TGCCCTCTACTAACAGAGTTGAACATTCCTCTTGATAGAGCAGTTTTGAAACACTCTTTTTGTAGAATC\\ TGCAAGTTG$ 

 ${\tt TCAAATCACATAGTTGAACTTACCTTTTAATGGAGCAATTTTGAAATACTGTTTTTGAAGGGTCTGCAAGTGGACATTTGCAGCGCTTTCAGGCCTTTAGTGAAAAAGGAAATATCTTCCCATAAAAACTAGACAGAAACATTCTCA$ 

 ${\tt CAGAGAAGAAGGTACATGTTAAATTCTCCCTTGAGCCGGGTGTGGTGGCTCATGCCTGTAATCCCCGCCCTTTGGGAGGCTGAGGTGGGCAGATCACCTGAGGTCAGGAGTTCGAGACCAGCCTGCCCAATATGGTGAAACTCCATC}\\$ 

 $\label{thm:control} \textbf{GCTTTCACCTCACAGAGTTGAACATTCCTTTTCATGGCGCAGGTTTGAAACACTCTTTTTGTAGAATTT\\ \textbf{GCAAGTGGATATTTGGATGGCTCTGAGGCCATTGTTGGGAAAAGAAATATCTTCAAATAAAAACTAGAC\\ \textbf{AGAAGCATT} \\ \\ \label{eq:controllabel}$ 

 $\label{total} TTTCATAGAGCAGTTTTGAAACACTGTTTTTCAGAATTTGCAAGTGGATATTTGGACTGCTGTGAGGC\\ CTTCGTTGGAAACGGGATATCTTCACATAAAAAGTAGACAGAAGCAATCTCAGAAACTTCTTTGTGACT\\ TTCATGTCA$ 

 $\tt CTTTGAAACGGGTTTTCTTCATATAAACAAGACAGAAGAATTCTCAGAATCTACTTTGTGATGTGTCTTCAACTCACGGGGGTTTAATCTTCCTTTCGATAGAGCAGTTTAGAAACACTCTTTTTTTGTGGAATTTGCAAGTGTACAT$ 

 ${\tt GAAAAGAATGGAATGGAATAGCATGGAATTGAATGGACTCGAATGGAATGGAATGGACTCGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGA$ 

 ${\tt ACAGAGAAGTACTTCAAGAGTTAAAACATTTTTGTGCCAATATTTTAAGAGTGCAGAAGGTTCCAAATT} \\ {\tt ACATGTAAAATAAACAATGCCAGACTGTGAAAACTCTTGGCTGCAACGTTCTCTGATGTTAACAAGAGT} \\ {\tt TTCTTTATT} \\$ 

TATGCAATCAAACCAATCAAAGGCAAAGCAATGGATTGGAATATAATGGAATGGAATGCAAAGGAATTGCAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAAGGAATGGAAGGAATGGAAGGAATGGAAGGATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAAGGATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAAGGAATGAATGGAATGGAATGGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAAT

 ${\tt CATATAAAAACTAGACAGAATGATTCTCAGAGACTACTTTATGATGTGTGCGTTCAACTCACAGAGTTTAACCTTTTCTTTTGATAGAGTGTATATTTAGAGTGCTTTTGAGAGTGTATATTTAGAGTGCTTTTGAGGGCC}\\$ 

 ${\tt GATCGTATACATCTTTCACCTTATGATGGTTAATTTTATTTGCCAAGTTGGGTTGTCTAGATATTTTGGT}\\ {\tt TAAACACTCTGTATGTGTCTGTGAGGGGTGTTCCTTGATGAGACAAACATTTGAATATGTAGACTTAGTA}\\ {\tt AAGTAGTTG}\\$ 

 ${\tt GTAGTCTTGCTCTGCCCAGGCTAGAGTGCAGTGGCGCGATCTTGGCTCACTGCAACCTCTGCCTCCCGGGTCAAGCAATGCTCCTGCCTCAGCTGCCCGAGTACCTGGGATTACAGGTGTGCACCACCACACCCAGCTAATTTT}$ 

AACATACTCTAATAGAATGGAATAGAATGGAACTGAATGGAATGCAACGGAATGAAATGGAATGGAACGGGAAT

 $\label{total} TTCTCTCGCTTTTGAAGTCAGACGTGGACTGTAACTTATGCCATCAGCTTTCCTGGTTCTCAGGAATTT\\ AGGCTTGGACTGGAACTCCACCATTGGCAGTCCTGGTTCTCCAGCTTGCTGACTGCAGGTCCTGGGACT\\ TCTTAGCCT$ 

 $\tt CGGCCTCCCAAAGTGCTGGGATTACAGGTGTGAGCCACCGTGCCCAGCGAGTCACTTGGATTATAGGCAGGGGCCACCACACGGGCTAAGTTTTTAAAAAATGTTTTGTAGAGACAAGGTTTCACCATATTGCCCAGGCTGGTCTT$ 

 $AGAAGCTTCTTTGTGAAGTTTGCATTCACCTCACAGAGTTGAACACTCCCTTTCATTGAGCAGTTTTGT\\ AACCCTCTTTTTTGTAGTATCTGGAAGTGAACATTTGGAGGGCTTTGAGGTCTACGGTGAAAAAGGGAAC\\ ATCTTCACA\\$ 

 $\label{eq:total} \textbf{ATTTGGAGCACTTTGAGGCCAGTGGAGAAAAAGGAAATATCCTCACACGAAAACTACACAGAAGCATTCTCAGGAATCTTCTTTGTGTTTTGCTTTCAACTCACAGAGTTGAACGTTCCTTTTCATGGAGCAGTTTTGAACCACAGAGTTGAACAATC$ 

 ${\tt GAGTCAAACCTGGACCCCTGCCATTCTCATCTGCAGGAAACACTGCCCTCCTTCATTCTCAGGCTGTGTTGCTGGAAGTCACCCGTCTCCGAGGACCCTTGGGATCGACTGAGTGACCAGCAGTGAAGTTCATCCACCTTCTGAAT$ 

 ${\tt TAGTGCTTTGAGGCCTATGTTAGAAAAGGAAATATATTCACATAAAAACTGGACAGAAGCATTCTCAGACACTAATTCGTGATGTTTTGCATTCACTGATTTGTCCATTCCTCTTAATAAAGTAGTTTTGAAATACTCTTTTT$ 

 $\tt CTCTACCATTGTAGCAGGAAAGCACCATAGATCCATGGATGTGCTCCAATAAAACTTTATTAAAACAGGCAGCTGGTCTGAGGGCCATGTATATATCTTGCTGTTTTCATGCAATTTTCTAAGTTAGTAGTTCCCTGCCTTTTTAAC$ 

 $\label{eq:continuous} GCGTTATTAATCAGAATCCTGCATTTAAGGGCATCTGTTAAATTTTATAGCTGATTATAAAACCATCAT\\ TTAAAGAGGACCAAAATGAGACAAAAATTGTCTGTGGATGACAAAAACATTAAGGGCAGCCACAGTTAA\\ AGACACGAA$ 

 $\label{eq:condition} \textbf{ATCTGACAATTATGTGTCTTGGAGTTGCTCTTCTCAAGGAGTATCTTTGTGGCGTTCTCTGTATTTCCT}\\ \textbf{GAAGCTGAACGTTGGCCTGCCTTGCTAGATTGGGGAAGTTCTCCTGGATAATATCCTGCAGAGTGTTTT}\\ \textbf{CCAACTTGG}$ 

 $AAACTTCTTTGTGATGTGTGCATTCAACTCTTTTTTTCTATAGAACAGTTTAGAAACACTCTTTTTGTG\\ GCATCTGTAACTGGACTTTTGGAGTGCTTTGAGGCCTCAAGTGAAAAAGGAAATATCTTCACATAAAAG\\ CTAGACAGA\\$ 

 $\label{totalattalacatt} TCACTAAATTTAAACATTGCATCCCCTAATCCTAGCAGAGTAACTGCATATAGAATAGAGGGCACATACTTATGCCTCACATTTGTTACCTTGACTAAATTTCCCGTAGTCATAGAAGTCTTTGTCCATAGGGGACCTGGATGCTCT$ 

ACAAAACAAAAACTACTAGCCAGGTGTGGTGGCACATGCCTGTACTCCCCGCTACTTGGGAGGCTGAGATGGGAGGATCACTTGAGCCTGTGAGGTGAAGGCTGCAGTGAGCTGTAATTGCACCATTGCACTCCAGCTTGGGTAAC

 $\label{thm:control} \textbf{TGATGTTGCATTCACCTCACGGAGTTGAACATTCCCTTTCATAGAGCAGTTTTGAAAAACTCTTTTTGCAGTATCTTGGAAGTGGACATTTTGAACGCTTTGAGACCTATGGTGAAAAAGGAAATATCTTCACATAAAAACTAGACGC$ 

 ${\tt CAGGCGTGGTGGCTCATGCCTGGAATCCCAGCATTTTGGGAGGCTGAGGCGGGTGGATCACCTGAGGTCAGGAGGGCAAGACCAGCCTGACCAACACGGAGAAGCCCTGTCTCTCTAAAAAATACAAAATTAGCCGGGCGGTGGTGGCC}$ 

 ${\tt AAAGTTACTCTTACCCTTTTTTACATTACTTGATAAAGGCAATGTTTAATTACATATTTCCTGTTAACTAGCTGGTAGAGTTCATACCTAAAGTCAGTAAATAATGTTAAGAATTTTTTCCAGCTGAGCAAATGGATATGTATCTA$ 

 ${\tt CTAGTTATTACCTCCTTTATTCTAAACCATGGAAAAAGGACCTATCAAATAAAGTCCTTCTAGAAGAGTGAAGGGCTCCTGGCAATGTTCTCTTTAATCCATGATGTGGGATAAGGGGAGTTTTGACTGATTATGAGGCAATGTATA$ 

 $\label{total} TTCTTCCCTCCCTTGAAATATAAGCTCTGGGACTATAGCTTCATGGACAAATTCTGAAGAATTTGT\\ CTCTGCTCTTGTGGGATGCTAACCTAACCAACCAAAGAATGTTTGCTCAATGGAATGAAACATCTTAAT\\ GCAGCTCAC\\$ 

 ${\tt CAGTGATTGCTGACCATATCCTGGACCCTCTGGAAACAGAGGGCTCTGCATCCATGTCCATGAGCCTTCATGCCCATCTGGCCATCAGGCCTTGGGAAGCACCCCACAGCCTTGGCACAGCTGCAGAGACCTCCTTGCCTCAGG$ 

 ${\tt TCCAGATAGACAGTTTTGGCAACAACCAAGTCATAATTTGAAGTCTTGTTATAGGAGCTAGAATTTTAT\\ {\tt TCAAGGGACAACTGATTTGATTAGATTAGATGCTGTGCACTTTGGGATGTAATTTGATTTTGAT\\ {\tt GAGGTTGGA}\\$ 

 $\label{eq:constraint} A CAGTCCAAAGATAAAAGGGTGCTGATTGGTATTTGTAACTCTCCAGCATATATTCTGAATCAATTTTA\\ A CATCTGCTGAAATCTACCAATTGTCATACCTTCACAAACTAAATCGATACTGAAGCTCAAACTTTGTT\\ A TACCTGAG\\ \\$ 

 ${\tt GATTCGAACGGAATGCAATCGAATGGAATCGAATGGAATCGAATGTAATGGAAAGGA}$ 

 $\tt CTGCACCGGACCACCTGAATTCCCTGGGCTGAGGCTCCATAGCACGCGAACTACCTTGCGTGAGCACTACTGAGATTCGACTTCGTGTTGCCTGTGACACACAGGGCAGGGCAAAGCCGCCTCCCAGCGTCTCAGTTGAACCCTTACC$ 

GACCTGCGCGGGAGTGGCCCGCGCTTCAAGATGCGCCGCCGCAGGCCGGGGAGGGCAGCCTGAGCCGCT TCCCGCCCCCGCGGGGACCGTCGCCAGCCCGCATCTCTAGCGAGAGGAGGTTCCACAGCGCCCCGGCA GCCCCGCCA

 $\tt CTCCAATGGAATGGAATGGAATTGAATAGAATGCAGTGAAATAGAATGCATTGGAATGGAATCGAATGGAATGGAATCGAATGGAATGGAATCGAATGGAATCGAATGGAATCGAATGGAAT$ 

AGTGGAATGCACTGGAATGGAATGGAATGGAATGGAATTGAATTTAATAGAAGGGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGA

 ${\tt GTATTTCTAGTTCTAGATCCCTGAGGAATCACCACACTGACTTCCACAATGGTTGAACTAGTCCACAGTCCCACCACACACTGCTCCCACACACTGTTGTTTCCTGACTGTTTAATGATTG$ 

 ${\tt AATGTAATGGAATGGAATGGAATGTAAGGACTGGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAA$ 

 $\label{eq:condition} \begin{minipage} A C A G A A A A G G C A T T A C C T T G G G A A C C C T T G G G A A C C A T T T T T T T T G G G G G A A C A G A A C A G A C C T T T G A T T T T T T T T G A T G G C T T T G A T C A G A A C A G A A C A G A C C T T T G A T C A G A A C A G A C A T A T T T T T T T T G A T C A G A A C A G A$ 

 $\label{eq:atgratega$ 

AGAGAGCCCTGGTAATAATCACCTCCAAACCGGCCCAACCGGTCCCAGAGGACCTGATGGCCTGGCCTGGCCTGGCCTGGCCTGGCCTGGCCCAGAGGCAGGTAAGGAGGTGGGGCGGCGACTCCTGGAGTGTCTGAAAGCACCAA

 ${\tt ATAATGACATTTTCCTCTGAGTAGATACCCAGGAGTGGAATTACTGGATCAAATGATAGATCTGCTTTT} \\ {\tt AGTTCTTTGGAAATTTCCTCACTGTTTTCCATAGCTGTTGTACTAGCTTACATTCCCTCCAAAAAGTGT} \\ {\tt AAAAGTGTT} \\$ 

 $\label{thm:control} \textbf{TTTCTGCATTGCCATGTGTATAAGGTTGCCTATAGCCCTCAGCTTAGCCAAGTGTTCTGTCAACCTTTTAAATGCTGCCAATGGTATGTTAAGAATGGTGTGTAGTTTAATTTGCATTTATCTAATTAGAAGTGAAGTTG$ 

 $AGAAGCATTCTCAAAAACATCTTTATGATGTCTGGGTTAAACTCACAGAGTTAAACCTCTGTTTTCATA\\ GAGCAGCTTTGAAACACACTATTTGTGGAATCTGCAAATGGACATTTGGAGCGCTTCTAGGCCTGTGGT\\ GAAAAAGGA$ 

 $\tt CGGAATGGACTCGAATGTAATGGACTGGAAACGCATGGACTCGAATGGAATGCAATCAAACGGAATGTA\\ ATTGAATGGAATGGAATATAATGGAATGAGAACAAATCAAATGAACACGAATGAATGAA$ 

 ${\tt GTACAGTCAGTGGTTTTATTATATATTCAAGAGGTTCACCACTGTCTAGTTGCTCAGCATTTTCATCATCAGAAGGAAATCTCTTCCTAACCATTAAAGCAGTCACATCCCATCTTCCCCCTCTCCTAGTCCTTGGCAACCACT$ 

 ${\tt TGGCTCACGCCTGTAATCCCCGCACTTTGGGAGGCCAAGGCGGGAGGATCACGAGGTCAGGAGATCGAGACCCTGGCCAACATGGTGAAACCCTGGCTCTGCTAAGAATACAAAAATTAGCTGGACGTGGTGGCATTGCCTGT$ 

 ${\tt CTAGCTACAGTCAGAATGTGATATGACTACAGAACCATGGTCACAGACATCCCACATTACTGGCTTTGAAGATGGAGTGATGGTCCCATGATCCAAAGAATAGGGACAGCATCTAAAAGTTTGAAAAGGAAATGGATTCTCTCTAGA}$ 

 $\label{total} TGAAAACTTTCTCACTTCTAGAATTTCCACTTGAGCCTTTGTTATTATTGTAGTTTCTTCTTCTTCTTCTTGCT\\ GTGATTTCCTATCCATTTATTTTAAGGGTTTTTGGGGTTTTTAGTAAGAATTACAATAACTACT\\ TTAAAAATC\\$ 

ACAGAGAAGGTGAGCTTGGATTTGTAAGGTTAAGTAGAAATTCACCAGGCAGAGAAGATGTAGGAAGACGCCAGGCAGAAGAAGACAAGGCAAAGACAAGGCAAAGACAAGGCAAAGACAAGGCAATGCTAGAAG

 $\label{eq:control} \textbf{ACGGTAATATCTTCACATAAAAATTAGACTGAAGCATTCTCAGAAACCTTCTTGTGATAAGTGCATTCAGCTTCAGAACCACTCTTTTTGTAGAACCACTCTTTTTGTAGAATCTGCAGGTGGATATTTGGA$ 

 $\label{thm:condition} \textbf{GTTGAATATTGCCTCTTTGCCTTCTGACCCTCTAGTCTCTGAAACATCTTTTGTACTAGAGGTATGT\\ \textbf{GCAGAGACTTCCTGGAAATTTGGATTTGTAAATTGTGCTGTTGTATCTTCTAGGCACTGCAGTGATCCA\\ \textbf{GATATAGAG} \\$ 

 $\label{thm:condition} \textbf{ATTAGCCAGGTGTGGTAGCACTCCTGCAGTCCCAGCTACTCAGGAGGCTGAGGCAGGAGGATCCCCTGCACCCGGGAGGTAGAGTTGCAGTGAGATCGCACCACTGCATCCCAGCCTGGGTGATGAGAGCAAGACTCTGTCTCAA$ 

 ${\tt GGAGGAAAGAACAAGTCATGGAGGCAGACAGGTCAGCGGAGTAAGAAGGGCACACAGGCCAGAGAGGCCCAGAGAGGCCCAAAGGCCAGAGTCCTCGCAGCCTGAACCTTGTCTCTGGTGCTTAACTGTTTTGGCCTCAGAATAACTT}\\$ 

 ${\tt CATCTCTCCTCCCGCCCTCCCCCCCCCCCCCCCCCCCAACAGAAGCTCTAAGCTGGGGAAGCCACTGTGTTGGATAAAGCCCTGTGGACTAGGAGAGCAGCTCTGTAATGCACAAAAAGTGGGAGACGCTGCTATAACTTTGCCCA$ 

 $\label{totalact} TGCTTTCAACTCACAGAGTTGAACATTCCTTTTCATAGAGCAGTTTTGAAACACTCTTTTTGTAGAATT\\ TGCAAGAGGGATATTTGGATCGCTTTTAGGCCTTCATTGGAAACTAGACAAAAGCATTCTCTTCACAAAA\\ ACTAGACAG\\$ 

 ${\tt GGAACAGAATGGAATGGAATGGAACAGAATAGAACGGAATGGAATTGAAAGGAATGGATTGCAATGGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAATGAA$ 

 $\label{eq:gagactcaga} \textbf{GGAGAACTCAGAGACGGCTGAAAAAAATTGCAAGCTGGCCAGGCACGGTGGCTCACCCCCGTATTCCC} \\ \textbf{AGCACTTTAGGAGGCTGAGGCAGATCACCTGAGGTCAGGAGTTTGAGACCATCCTGGCCAACACG} \\ \textbf{GTGAATCCC} \\$ 

 $\tt CACCTCCTTGTATCCATACTTCTTTGCAAGGTGATTCTGATACTTTTTCCATGAAAAGGTCAAAATTATTTTCCAATCCTTAAATCTTGGGTTGGCTATACCAATAGCACGTGGCAGAAGTAACATTGTGCCATTTCTTGGGCCAGGC$ 

 $\label{thm:control} \textbf{TGCCATCATCTGACATGATGGAGCGCAGTGGGATGCTGCCTTCCCTTCCCTTAGCTAGGATGTCCCTGATAAAGGATGACACCCAAGCCTCAGCACAACTTGACGTGGTCATCTCAGCACTGATGCTGGCCAAACTTGAGGTGGTCATCTCAGCACTGATGCTGGCCCAACA$ 

 ${\tt AAGGACTGGAACGGAAGGCCATGGACTGGAATATATTGACTGGATTGGAATGGACACGAATGTAATTGAACAAATGGAATGGAATCTCACGGAATGGAATCATATGTAATGGAGAAGAATGGAATTCACTGGAATGGAATGGAATGTAATGGAGAAGGATTT$ 

 $\tt CACCCATTTCTCAGTCTCTCAGTAGTACCAACAGTGCCCTAACCATGAGCACATCTGAAGATTTTTCACCAATGTTGAAGTCAGCTCAAGGATGTTCATACCCAGCCCATGTAAGATGTGTAGAAAAGTTTCTGTTTTGTTTTGCAG$ 

 $\tt CTAGACAGAAGCATTCTCAGAAACTTCTTTGTGATGTGCATTCAACGCACAGAAGTGAACCGTACTT\\TTGATGGAGCAGTTTTGAAAAACTCTTTTTGAAAAAATATGCAAGTGGCCATTTGGAACGCTTTCAGGAC\\TTTGCTGGA$ 

 $\label{eq:condition} \textbf{GCCTACCATGTTGCCTGACATGTGGTGGCATCCTCTGCCCTAGACTTGGTTCCATGCCCTTGTCT}\\ \textbf{GACAACTAGCCCATTCAGCTCCTGGAACCCTGCTCACAGAGGAGACCAGAACATTCTGTAGACTCCATGTACCTTATT}\\ \textbf{TACCTTATT} \\$ 

 ${\tt GTAGAGTTTGCAAGTGGACCATTTGGAGCGCTTTGGAGGCCTATGGTGAAAAAGGAAATATCTTAACATAA}\\ {\tt AAACAAGACAGAAGCAATCTCAGAAACTTCTTTGTGATGTGCACTCAACTGACCCAGGTGAAACTTT}\\ {\tt CTTTTGATA}\\$ 

 ${\tt TAAATTACCCATTCTGTGGTATAGTGCTATAGCAACACAAAACGTACTTAGCCAGGGATTTATCCAGGCAAAGGCAAAGTCCCTGAGGTGGGCACATCCCTGGTGTACAGGAGCAATGGCCACCGTGGCTAGGACACGTTC$ 

 $\tt CTCAAATGGACAGGAATCAAACGGAATGAAATAAAATGGAAT$ 

 ${\tt TAAAAACAAGTTGTGTAATGTTAAAAGTTTTAATACTTTGGTAATAGTCTGTGCAATGTAAAATAGCTATTAAGCTTTCAATCTGATCAAATGAACACTTGTCTACTAGGGATAATTTGATCCTAGTGTATTCACTTGGAGGACAAA$ 

 ${\tt TATATAATTTGTACCATTTAATTCTTCAACCCTAAATGATACTATTACGAACCACATTGTATGAGATGAGAAACTGAGATTTTCATCAAAACCATGGAAAGCCAACGTGAGGAGCCCCTGTGTGTCTCCTTTGTTAATGCCTCTGG$ 

AAACCTTCACATTTGTAGTCTGTCTTCTTCCAGTGAGGCTGCCACAGTCAGGACATTTTGCCCTA GGGTTCAGGAGATGATTGTGAGTCTAAATCACCCTCAGGTCAGTGAGGATGGCCAGGAAGAGAGGAAGG AGCAGGAAG

 $\label{eq:GGGAATAGATTGAAGCAGGAAGAGCCCAACACTGTCTGATTTTTGGTCTAAGGGACCTGAAAGCCTT\\ TGAGTCTGGGTAACCTGATAACTGACTTCAGTGCTGTCCAGCCCAAATATCTGCATTGCGTCTCTTAGA\\ GTGTTTGGA$ 

 ${\tt GGAATGGTAATAACGTAGGAGAAAATGGCCAGGGTCACAGCCTGGTTTGTCCCCTTCTCACTGGGGGCCTGCAGAAGGCTGGTCCAAGCCAGCGACATCCGTGCATAGGGGTCAAAATGGACTGGGACCCTTCATTTGCTCCTGGT$ 

 $\label{thm:cocc} \textbf{TTGGTTTAAAGCACTACTGAAACCAAGATAAACTGTGGCTTAGCATTCCCCCGATGGATCAGTCTAGTA\\ \textbf{ATCTTATCAAAACCAAGATTACCTAAAAGCACTAACCAAAGGAAAAGCTCCCTCACCCCAACCTATGAC\\ \textbf{TGCTCACAT} \\$ 

 $\tt CCCGCCCCTCTCGTCTTGCCGCTTCTTTGAGCGGAAGTTGGATCACTGAAGCGCCAAAAAAGAATTTAGGGAAGACCTGATTTTCGCTTGAGGCATTTTTGCGGCGCTGTGCGCTACAGACACCTTCTGGAAGCTGCGGTGGGGAA$ 

 $\label{thm:condition} {\tt GTGATTTGAGGAGGCAGTGGCACCTGTGGCTCTCCTGAGAGGTGCTTAGGAGAGTCCAGAGGCTGAGAAGCCCAGTGAGGAGAAATGGTGGGCTGAGTCTCATCGGAAAGCACTGTTTCCTGGGACTCAGTCCCATTCAGAGTCT$ 

 $\label{thm:control} {\tt TTTTGAGTGAACTTAGGGTCATCTCTGCCATATCATGCCTTCCATCTGCCTTCACTCTGCAGAACTTCCCTGAGGGGTCAAAAATGCAGGGTGACATCTGGGACGCTGAAAATGTCATGTTCTCCTAGGCAAGCTCGTCTCCTCAGT$ 

 $AGAAGGCTCTATGGCAGAGAGATGCAGGTGCTAGGGGTAGGAAGCTCTCGAAGCGCAAGGGAACTGCCC\\ AGCAGGGTGCCACTTGGGCGCCATGGGTGTGACAAGGGAATATGTGCGGGGAGCTGACTGTCCTCTGGAGTCCTCCAT\\$ 

 $\label{total} TCTTAACACGAGGTGACTAGAAACCATCTGTCTTGAGACCAGGAGAGGAGACCTGTGGTCAGTGACGCTGTCAGGAAATACTTGCCATTCCTGACCTCCAGGCTCAAGGAGGGATTGGCCACCCTGGTCCCCTAGGAAGATGGGGCC$ 

 $\label{eq:totalcolling} \textbf{ATCAGCCTATTTCATCCGTCCGTCAGTTATATATAGAAGAAGCATCGCCTTGTGGTTAAGCACTTTGTCTGGGTTAACTCTGCTAGTTAGGCAAGTTTCTCAACTGCTCTGTGCTTCAATGTCCTCAATTGTAAAATGGGTAAT$ 

 $\label{thm:constraint} TTTTACAGAGTTCTTGAGTTGTGAAATTATTGTTTAGCTAGTAGCTAGTTTAACCAGGATTAAACA\\ AGTTTAATCAGGATTCTTCATGGATGTACTTCCTTGGCTAACTACAGTTTTTCACATGGAAATGAAACT\\ TACAGTACA\\$ 

GCAAACCTCATACACAAACCTCAATGGTATATCCTACTATATACACCTAGGCTACATGGTGTAGCTCAT TGTTCCTAGGCGCCAAACCTGCACAGCATGTGACTGTACTGGGTACTGTAGGCAACGGTGAGTATGTGT GTATCTAAA

 ${\tt AGTTTATAGAGCAGGTGGGGACTATCTCTCTGGCCAGAAGGATCTCAAGCTGGTTTCCACCTGAAAGGGATGCTATACCACGAGATACTGTGACAGTCAGAGAGACAGGCTTATAGCTTTCTCCTCCTGGTGGAAGTTTATATGAAA}$ 

 $\label{thm:condition} \textbf{TGCCCCTTTCCCAGGCCATGGCCATCTTCAAGGCAGAAGATGCCAGTGGGGAGCAGCAGCCATGCTGAACAACATGCGTGTTTACGGCACCTGTGTGTCACCTGCATGGCCACTGTGGTGTTTTGTGGG$ 

 ${\tt GATGTGTACTCAACTCACAGAGTTGTACTTTTCTTTTGATAGAGCAGTTTTGAAACACTCTTTTTGCAGTGTCTGCAAGTGGATATTTTGTTAGCTTTGAAGATTACATTGGAAACGGGAATATCTTTACATATAAACTAGACAG$ 

 $\label{eq:totalg} \textbf{GTCACTGGTACCGGTTGTTCCACATTTAGGGCTTCCTTCAGGAGCTCTTTTAGGGCAGGCCTGGTGGTGCCCAAATCTCTCAGCATTTGCTTGTCTGTAAAGTATTTATGTCTCCTTCACTTATGAAGCTTAGGTTTGGCTG$ 

 $\label{thm:control} \begin{tabular}{ll} GCACATTTGGCGATTTCAGTCATTATAACTGCAGTAGTGTGTGACTGGCATATGGTGGACAGAGGCCA\\ GGGATGCTGCCAAGCATCCTACGATGCATGGGACAGCCCCTACAACACAGAGTTATCTAGCTCAAAATGTCGATAGTG\\ \end{tabular}$ 

 $\label{thm:control} \textbf{GGACTTTATGCATCACACACAGCAGTAACCCACCACACAGTCACATTCAGGAGTGGCTAAGAACCATCTGT} \\ \textbf{GAACAGCAAACTGTCTACAGACAGTGCATCTCCAAGCCTGAAAGATACTCGCTCTCTGATGTTGTTTAT} \\ \textbf{GTGGCCTCT} \\$ 

 ${\tt GTCAGAGTCTGATTTGCACCCAGCTGTGTCTCTCAGGTGATTTTCCCCAGCACTTAGCTCTCTATGCC} \\ {\tt TCAGTTTACCTGTCTGTAAAACGGGGATAATGACCTGTTCTACCCTACAAGGATGCTGGGAAGGTTAAATGAGATCTT} \\ {\tt TGAGATCTT} \\$ 

 $\tt CTTATCACATAACCTCAATCCAACTACAGGGGGGCCAATAAGCAGTATCCTACACTGTGTCTGGGAGATACAGACATGTTTTGGTGAAGAGCCACCTCACTGTGGACTGAGCTTTGCAGCAGAAGCAGGACATGTGAACATGTGAGAC$ 

TAACACAAGAGATAAATCCTACTGTTTAACACGTGACATGGTTCTGTCTTTTACCTGGATAACTGTACC AGCAATAGCCCAAAAAGGTATCTGTGGTAGAAGATACTACACTAAGGAGGAACACAAAAACATGAACATT TTATTTGCT

ACCACACATACCCAGGAAAGGCTCGTGTTCTGCAGTGGTTACCTTACAATTCAGAATGAACTTTGAACA
AATCCCTGAAGACAACGAGGCTGGCCGTGGATGTGCAGCTTGCGCCTTAGTGTGTCATCTGTAAA
ATGAGGTAA

 $\tt CTATATTGAGCAGGCTGGTCTTGAACTCCTGAGCTCAAGTGATCCTCCTGCCTTAGCTGCCCAAAGGGCTAGGAGTACAGGCATGAGCCACCCAGCCAACATGAGATGACTTTATATTCAGTTTCTCAACAGACCCAGATGC$ 

 $A GAGTTAGGAGACCCAGGAACCAGCAGGTGGGATTTTAGAAAGTGCTGTTTGGCTCTGACCAACCCCT\\ ACTCCCACCCCATGCATAGCAGGGTTAGTTTCCTCATCAACTCTGGTCTCTGATTCTGATGTTCTGCCC\\ CTAAGCATC\\$ 

 ${\tt ATAGGAGGAGCAGTTTGTGCAAAGGGGATGGGGGAATCCCTATAACTCCTGTGCAGGGATGTGAGGGTCAAGAAGGCACTGTGGGGTGAAGCATCTCCCATGCCTGACCTTCTCCCACCTCTTCCTGCACCTGACTGCCTAGGCT$ 

 ${\tt CAACACTGCCATGCCCAGGATCCTCTGCCCTTGATCCTGAATCAACAGACCACTTGCAGATATACTTCACAGCCCACGCTGACTCTGCCAAGCACAACCACTGGGCCCCAGGGGAGCTGCAGGTCTCCTGGTCACCTAATCTT}$ 

 $\label{eq:gamma} \textbf{GGTTTCGCCGTGTTGGCCAGGCTCTAAACTCCTGACCTCAGATGATCTGCCCGCCTTGGCCTCCTGAGGTGCGGGGGATTACAGGGGGTGAGCCACCATGCCCAGTCTAAAGGAAAGTATTTCTGGTTGACAAGTCACAATCCTC$ 

 $\label{eq:condition} \textbf{ATGCAGCCACCTTGGCTTTCCTGTGCTCACTCTTTGTACCTCTCTACCACGCACCTGTCCATCTTTGTACCTTCTACCACCCTGGGCTCTTCCAAGTGTGTCTCCTGGGCACAGCATGCTGTCGGGTCTTGCTTCTTTGATCCAGTGTGACCAT$ 

 ${\tt CTAGCATATCTGGTTGCTCTGGTGATAGATGAGCCAGGTTGGGTGGAGGCAGGGCTCACCCCACTGAGTTGCAGTCTAAGGTAGAGATCTCCTAACAACCACCACTAGCCTTGATATCCCACACCCAAACACCACCCTATATAACCT}$ 

 $\label{eq:total} \textbf{ATAGTCATGTGGCTTTACTTGGCATATGTGGCCCCGATTGTCACATGACAAGGCACCTGTGGTGGCCTGTGCCTGTTGTTCACAGGCTGCAGCCTCAGGCCACAGTACCTGAAACCTGGTATTTTATAAAGGATTTGTTG$ 

AAGAAGCATTCTCAGAAACATCTTTGTGTTGTTTGCTTTCAACTCACAGATTTGACATTCCTTTTCATA
GAGCAGTTTTGAGACATTCTTTTTGTAGAATTTGCAAGTGTATATTTGGACTGCTTTGAGGTATTTGTT
GGAAAAGGG

 $\label{thm:condition} \begin{tabular}{ll} ATGGTGGCACGCGTTTGTAGTCCTAGCTACTCGGGAGGTTGAGCCAGGAGCATCGCTTGAACCCGGGAGGCAGAGGTTGCAGCTGAGATTGCACCACTCCAGCCTGGGCGACAGAGTGAGACTCTGTCTCAAAAAAAT\\ \end{tabular}$ 

 ${\tt GAAACAACAGATGCTGGAGGAGGCTGTGGAGGAATAGGAACGCTTTTACACTGTTGGTGGGAGTGTAAAT}$   ${\tt TAGTTCAACCATTGTGGAAGACAGTGTGGCGATTCCTCAAGGATCTAGAACCAGAAATAACATTTGACC}$   ${\tt CGGTGATCC}$ 

 $\label{eq:gagtactag} \textbf{GGAGTACCAGGTACTGCTCTGGAACTAAGGATACAAAAGTAAACTAAACTGTCCCAAGATCATTCAAGCAACAACCGGGAAGCCAGTGTGCCTGGCACAGAGGCAGCAGCAAGGGAAAGGATCTGAGAACAGAGTGGCTACTTAGT$ 

 $\label{thm:condition} \textbf{GTTCGTTCCTCCCAGAGATTCAGATTTAACTGGCCTTGGGTGTGTCTAGGCAGTGTTTTAAA} \\ \textbf{GCTCCCCAGGTGATCCTAATACGCATCAAGGCTTTAGAGCTACCGCCTTAGAGGTCATCTAATCTCTGA} \\ \textbf{ACTTGATTT} \\$ 

 ${\tt TCCCAACAAGAACATACTACATCCTAGACATGAGATGAAAATAAGCTTTAATTTTCACCACAGCAGGGC}\\ {\tt GACAATCAGAGAACTGAGGTGGTACAGATCCATTAGAGGACCATATCCATGAGTCTATCAGTCTCTACT}\\ {\tt GTAGGACAG}\\$ 

 $\label{total} TTCATTCGACGGAAGGAGATCTTGGGATGCCACCACTAGGATGTTGTCATTTGACACTTGTCACCCTGT\\ AGCTGGGCTCTGCTGAACCTAGGCACTTGCTGCCACATTCCTGGACGTGCATCTCTGCTCAATTTCTCA\\ GAATCATCT\\$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGTGTCCAAGAGGTCTCATCCATGCAAGGCTTAAGAGAGAATGCAGGTCAACATCACCATGTCAAAAAGGCCCATTGGTGTGGGGATGAATGGTCTTGAAAAAAGCCCTTCAGGAG\\ \end{minipage}$ 

 ${\tt AATTAGTCGGGAGTGGTGGCGGATGCCTGTAATCCCAGCGACTTGGGAGGCTGAGGCAGGAGCATTGCTGGGAGCCGGGAGGTGGTGGCAGTAAGCGAGATTGCCCCACTGCACTCCAGCCTGGGCAACCAGAGTAAACTCTG}$ 

 $\label{thm:condition} \textbf{GGTTACAGGCATGCCAGATATATGGAAGCATTCTCAACTATGTGAAAATATGTGAAAAGCTTTGTTATGCATTGTGAGACAACACAGTGGGAATATTTCATCATCTGCCTAAGGTTTAAAAGGAAATAACTTTAAGCATGTGTCTAA$ 

 $\label{thm:condition} \textbf{TTTCTAAGGATTTTCAGATGTTAAACACTTTCTCATGCACAAACCACTTAAGCAGCATAGACCACGAGGATGTTACATTCAGTATAGGCACCTATTATTTTGGTAACTCAGAAGTAGGAAAATGGAT$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} $ACCTACCAGTGACTTACAGTGAACTGATAGAAGAGCTCAGAGAATTTGCCATGAATTGTTATAAACCAGGAGGTGATTCCACCTGCCTTGGACTTTCTCTTACTGATATTCAGTGCTCTGTTGCCTCAGGACTCA\\ \end{minipage}$ 

 ${\tt GAAATCCATGCAGGTTTGCACGTATCAACAGTTTGTTTCCTTTTCATTGCTGAGTATTGTATGGTATCTTATACCATTCAGCCACTGAAGGACATTTGGATATTTCCAGTTTTTGTCTGTTATGAATAAAGTTGCTGTGAACATGTG$ 

 $\label{eq:condition} \textbf{ATGGTCGAATGAAAGGTACCAGTGGAGTTGGGGCGGGGAGGAGGAGGAACTACTGTTCAGTGAATACCT} \\ \textbf{ACTATGTGCCAAGCACTGTGCTAGGTGTCTTTTGTGTACTATCTTATTTAACCCCTACAACAGCCCTGC} \\ \textbf{AAATTATGT} \\ \textbf{CONDITION OF THE STATE OF THE STATE$ 

 $\label{eq:control} \textbf{ACACAGTATCTGGTGTACATGTCTCTCTCCCAATGAACTATAAGATCTTTGAGGTAAGGGTTCAGTGCTGCACCACTCAGCTACACTAATGGCAATGTGCACACAGTGAGCACTCATTAAATACATCAGTTACAGTTCACTTGCA$ 

 $\label{eq:condition} \textbf{AGATGGCTCCCAGAGTGAGATCGGAATTCACTTTCTGGGCTCAGCCTTTCTCCATAAAGCTGGTCGTGCCAGGTTTATGACATCAGCAGAGCCCCAGAGTGAATTACGGCTCATCCTTGTGTTCATTCTGGTGCCATCTATTAT$ 

 ${\tt GATCTGGAATATTCCCTTCATCCCATGGAGTTACCTGTGCCATTTAACCTGTTCCCCCATCCCCCACTCCCGGGCAATCATTGACCTTATCTCTGTAGCCTCAGATCAGTTTTGTCTATTCCAGGACTTCATATAACAGGAACCATGT$ 

 ${\tt TCCTAGCGCAGGTCAGAAGCTTAAGGGGAGCCTGGGCCAGCGTCCTGGGCATCCCATCCTTGCATTCTCCAGACCATGACCACCTCCAGACCCTGCTCATTCCTAGACCTGCCTACTGGACCATGGGATGGTGATCGCGCTACAGGCA$ 

 $\label{totagcaaccatccaggaaacatcagcctggttctctggctcctgttggctcttgagtacttggactaggctaacggaaggcatattgagagacacaggatagggcagaaggcttcctggaggaggcatattgagagacacaggatagggcagaaggcttcctggaggaggcttc}\\$ 

 $\tt GTCACACAGCTAATGCTAATAAGGCATAGAATGAACAGGACAGGTGTGGCGAAGGTAGAAGTGCTGGTGGCGTGGAGAAGCCACCTATCATCCTAGGAGTGATGGAAGTGTGGACCACCCATTGGGACCCATGTGGCAGCCTCT$ 

 $\label{thm:condition} \textbf{GGGCTCATGAAAGGCCACATTCTAGAGATAGTGATTGACAGGTATTGCCATATTCCCCTACAGCGTGGTGCCTGTTGTCATGGGAGTAGCATGTCTCTTACAGGGTACTACCAGAAGGCTCAAATAGGAAGAGCCAATAGTCCATGTGAG$ 

 $\label{thm:condition} {\tt GTGAGAGTGTTCATCACCTGCAGCAATTGATAAGCATGGCATTGGGAGTAGGATATGCCACCCTCCTGGGGTGTCACACATTCCACATGTGCTAGGTGACACCCTTTGCCAAGAAGCAGAGCTGGGCTGAACATTCAGTTTCCTAGG$ 

 $\label{thm:condition} TTACAGCCCTAAAACTCAACATGTTCAAAATTAAATGCCTGATCTCCCCATCCAAAGGTGCTCCATGTGCTGCTTTTTCTAACACACCTTGACGGCAATGTGTTATTCCAGTCTCTTAGGCCCAAAATCTTGGGGACATCACTGACTT$ 

 $\label{thm:control} \textbf{GGTGTTCACCGATCACCGATTATTTCCTTGGCACCCACTCAAAGCTCCCTGCAAGTCAGGACTCTGCCCCTGTTGAAACCATGCAGCATTAGCCTTGGGAAAAGGTGGGGAGAACTATCTGTCTATGAACCCC$ 

 ${\tt CCTGAGTAATTGTTACAAGCCAGAAGAAACTAAAGGGACATGATGACTAAATGTAGTGTGTCCTAGAAGGGACTCTGGAGCAGAAAACAGGTGGAATTTAGTTCATAGGAATGTACCAGTGTTGGTTTCTTAGTTGTGACAAAT$ 

 ${\tt TACCACACTTGACATCCCCCACTCCTTCGCCATGAGTTTTCCCCTTTCAGTGGATGAGAAGTGGCCCAGGATGTTCCCCAGTGACACATTAGCATGTGCCCTATGCAGAGGGGCAGGATGGACTTTCAGATGCCTGGGGGATGACAAC$ 

AAAGAGTGGAGGGGTGGTGGACAAACTTGCAAATGACCATATCATGTGTGAACATAGAGCAAGAGCT CAGTTACCACCAAGGAGATGGCCCAAGCCATTCATGATGGATCCACCCCTGTGATCTTTCACCAGGCCA AACCTCCAG

 ${\tt TATCATAGCACATTATTCATATTTACTCTTCCTATGTAGATAAGTAATGTCCTAGATTTACAACATAGAAAAACAGGTAGAGACGTTTAGCTGTGAGTGTAAAAGTATAAATCAATTAAGTGCCAGATTTTGATAATCACCAGC$ 

AAAACCCATGTTCAAAAAAAGGAATAAGACATCAAATATTTTGAGAACCAAAATTTCACTGCTGCTTTT CTAACACCCTGTTGTTAACCTGAGCCCCCATCCTCTTACTGTCAGTAACAGATTTTCATAATAAAATAC AAGAAACAG

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} $ACGCTCAGGTTGAGATCGTGTACCTCGCTCTCCTGGCACAGGTATGTGACATTCAGGAACCTGCAAAACCTCTGCATGACCACGGAGAAAGAGGGGACTGATCTGGCTCTCAGAACCTAGGGATGAATGGGTGAAA\\ \begin{minipage}{0.5\textwidth} $TGGGTGAAA\\ \end{minipage}$ 

 $\label{thm:condition} \textbf{TGTTTACAGATGGAATGCTGCCAGTCCTGCCAAGTCCAGGCGGTTATTCCTCTCCACAGCCGAAGGAAACTAAGGCTCGGGTGGGGAAGTGTCCCCCTGGGGTCTCTCCGCTTAGGCTGCAGGCTGGGCATCCTTTTTCAAACTCT$ 

 $\label{eq:control} \textbf{AGTTAATGTACTAATTCTTTATTTAAGTAGACAGTTGTAGTATATGGATGTTTTGTTAAATCTTT\\ \textbf{GTTGATACAGAATACATAATTTCCTTTTTCTGTTTGTGTGAGAAGATAAGATTGAACAAAAATATGTGA\\ \textbf{GTGCTAAAC} \\ \\ \end{tabular}$ 

 $\label{total} {\tt TCCACTGTTGCCATTTTGGTCCAAGCCATCATCTCTCAACTGACTATTGCAGTAGTCTCCTGACTAGCCCTGTTTTGGTCTTGGTCTTGACCCTGTATTAGGTCAGGTTTCCTAGAAGCAGAGCCTATGACAGATGGCTTTTGCATG$ 

 ${\tt GAAGAGTCAAAGACAGCTTCCAGTTTCACAAGGGTAGAGTTCATGTCAGTGGATTTATATGGGACATGT}\\ {\tt GGAATATGAGATGCCTCTGGGACATGTAAGTGAAGATAATAGCAGGGAGGCTGTGAAGTGGACAGGGAGCTGAGAGTG}\\ {\tt CTGAGAGTG}\\$ 

 $\label{totagact} \textbf{TGGACTGAGCTGAGTGGCTCTTCTGGTCTTGGCCAGACTTACCCATGTGTCTAGGGCAAGCTTTGTCTAGGAAGACTTCAGCTGGGATGACTCATTGGTGCTTCATGCCATCTCTCACCAGAAAGCCAGGCT$ 

 $\label{thm:condition} \textbf{ATCAACAGTTGTCATCCAAGATAACCCTAGAAGTGACATAAGGAGCCAGAAGTTGCCACCCATTTTGGCTCCAAGCAGAACAGACATACTATTCTCCCAGGTGGGCATGGAGTTAGAGTCACTGGGAAATCTGTTTCCCCTTGATGA$ 

 $\label{eq:condition} \begin{minipage} ACGAAAATGCATTAGAACCCATTGTGAACAAAATACTGAAAATAGCCCCCTCCTCA\\ GAAGCTCCTACTGTGTCCCATTCTTGAACATAACCCATTGGTTCCTTGTCCTGGCTTTTATGACT\\ AGTTCCTTG\\ \end{minipage}$ 

 $\label{eq:constraint} \textbf{AAGGCAAAAGGACTGCACATAAGTACTGTACTCGGAGGAAATTGTTTCTCACAGAGGATGGGCTAACAAACCAGATATGATACATGTGCTTGTAACTAAGCAGTTAAGAATAGCAAAGATGGAAACCAGGTTTTTTACTCTTGGAGC$ 

 $\label{eq:constraint} \textbf{AGTCCACAGGCCTGTTTGGAATCTCCACCAGGCCCAGCCTCCACACACTTGGCACCTGCCGAGCAAAGGGCATGTTGAGTGTCCACTCTGAGCTCAGCACGGCACCGGGGGCCTGGGGGCTAGGCTGGCAGGAGGATTCCCTAGACAG$ 

 ${\tt TAAGGAAACTGAAACTCAGAGGGTGGCATGGATCTCCAAAGTTCACAGTGATGAGCTTTGAATCTGAGCTTGAGATTTGAACCTGGGGCATCTGAACCCAGAAGCCATCCTGTTAATCACACATGACTTCCCATTGCTCTGAGATTGACAGATATTTTGCC}$ 

 $\label{thm:capprox} \textbf{GCAAGTACCACTGTTACCTTGGAGCATCACGTATCACAGTGGAGCCTGTTAAAACACAGATTGTTGGGCCCCAGCCCCAGCAGGTCTGGGATGGAGCCTGAGCATCTTCATTTCTAACTGGTCCCAGGTGATGCTAATGC$ 

 $\label{eq:total} \textbf{ATAGAGTTTCTCACCTATGATCCACACTTGTGGCACTTGAGAGTTTCTCAGCGCCCTAGTTGAGAGAGTGTGCTGCTACAGTGGCATGGCTTTGCCAGTGGTTGCAGCGCTAATTCTCAGGTCAGGGGTGTGTGCATCCAC$ 

 ${\tt GAATGTGTCTGGCTTGTCATCTGCATAGTCCCTAGCATAGTACCCCACATGGTACCTGACATATAACAT}\\ {\tt GTGCTTGATAAATAACTGTTGACTGACCGATGCCAGAACACCCCTTACCCATGACAATGTCATTTCTAGAAGGTTCTG}\\ {\tt AAGGTTCTG}\\$ 

 $\label{total} TTGAAGTGTCTTTGAAAGATCTAAGAGGAAATATCAAGTAGGGAGTTGGACATGAGAGTGATGCTTAGGGACTTGGGGTTGAAAAATTGCAAATTGTGCATATTGAAGCCATTCACACATATACAACTGCCTAGAGAAAA$ 

AGTGCAAGAGAAACCAGACAAACATCCAGCCATGCTCTCCCAGTGGAATCACACAGACAATGCCTAA TCCTCCTAGCAGTGATGTGCAGTGCTGCCAGCCAGGGAAGCTCGCCTGAACTTTAATGTCAGAGTTT TATTGGAGA

 $\label{thm:control} {\tt TTGTAGAATAAATGAATGACCATCATTTGAGATAACAGTAGGCTGTAGTAGATACTGTGTATATAGGCTATACAGAGCTGTGGGTCCAGCTCTGGGCCCACTATATTCCCAAACATGATGCCCAATATATGCACTTAATACC$ 

 $AGAGGATAGAGCAAAGGGAATTGGAAGAGGAGCAGACCAGATTCAGGGTGTGTGGTTACCTTGCAGTC\\ AATGTCTGAGGAAGATCAGAAATTCTCAGGGAACCAAATGCTGTCAGTTCTGGTTCACTTTGTGGTAAA\\ CACTGTGTA$ 

GGCTGTATCAGAATCACCTATACTCACTCAACTCCTGAGCTTCCAGGGCTGGGGAATCACTGTGTG CTAGGCACTAAGGGACAGCAACATTATAGGCAGAGCATGCCTCTGAGTTCACAGGCCAAGGGGATAGGT ACCCCAGAA

 $\tt CTGATAGGGTTCTGATATGAGTCTGCAAGCAGTTGATTTACTATGGTCTCTGCAGTCAAACCTCCCGGCTAATGTTAATCTGTATTTGCAGCCACTCCCCACCACTAGCATCACTGCCTCAGCTCAGCTCAGATAATCATGCATTA$ 

 ${\tt AACTGTAACCCTGGAAAGGAAAGAATGTCCAACAAGGAGGCAAAAGTGAGCACACAGACGGGATTCAAACTCTATCAAAGAGTGGCTGGTAGCTTCTGCTGAAGTCCTTTCTCCTCTCCAGCCTTCAATTAACTCCATCTGTTGATT$ 

 $A GAAGAGCT CACTGTCTGTGAAGGGGTCTGCTCCTCACCTGCCCTCCAGGACCCAAGGAAAATTCT\\ GGGCCAGGACAGAACAGTAGAGGAGGGAGGCAGAGGTTAATGGGGGCAAGCTAGAACCTCCATCACG\\ TGGGCTCAG\\$ 

 $AACAAGATTCTCATGGTCCCCATTCACATAGAACTTCTCATCTGGGAGTAAACCATGCACTGGATGAAT\\ AACACCTGCTGTGATGCGTGCTACTAAGGACAAGTGCAAGGTGCAACGGGAACCATTACAAAGAATGCT\\ GACCCAGAC\\$ 

 $\label{eq:total} \textbf{ATTCACTCTGTCTGTCTCTCTGGCAGTGTAGCTTTGCTGTATAGCTTAATGACATTGAGTGGAGCTTTGTGAGGGCTCTATCATGCAAACTATGGACTTGTGTTCAGTGAAGCACAGAGGGGCACAGAGGTACAGAGTC$ 

 ${\tt TCAAGCTTGGGCCACAGGCAAAGCCAACATCCCTGGACAGCATGAGGGCTAAGGCACAAGGGGCCTCTGCCATACTTTCCTACCCGGAGATGCCTCTGGGCCCCTAAATCTTGGTTAAGGTTCCCCTCATCCCATTCTTG$ 

 $\label{eq:attacagataaatattttagagacaaggtctcactctgtctcacggtcaccaagactagaatggagacgcatgatcatagctcactgcaccttgaagtcctgggctcatgtcatcctcccacctgagccgcctgagtcatgctgg$ 

 ${\tt CAGAAAACCCAGCAGATAGCACCGTGAATGAACAGTTTGTTCATGCAACTTTCAGGCTAGAGAGCAGCATTTTAGGACTAGTAGTATAACCATTCCACAGTGCCTTCACAACCCAACCTGCTCTGCCTCCTGTGTCAGGCCTTA}$ 

 $\label{thm:condition} \textbf{ATCCTGACAGCTCATTTTGGCTCAGTGGCTGGAGTCATAACCATGGTTACCAGTTCAGGGTCTCCAGATGGGAGTGACCAGGGCAGTGAGAAGCCTCAAAACACTAGCAGGACTGAGAAAGGACTGAGAATGACAAGCCCAGAGTAAA$ 

 $\label{thm:condition} \textbf{GTGCTCATCCTGCTGTGAAATGGAACCATAATCATGAAACAACAGCCACAGTCACTGAGAGCTTACT\\ \textbf{GAGGACTGGGAATGTACCTTACATGCATTTAATCCATGCACAAAAAAGCAGGCACCATTCTTACTACCA\\ \textbf{TTTTACAGA}$ 

 ${\tt AATCACAGGATCCACTGAATCTGTGCAGAGAGACTTAGAACTATACTGCAGGAGCATCTTACTGACAGCTGCCCTGAAGACCAGCCGAAACACACAAAGCAAGAGCACCTCCAATGACCAGGTGTGGTGGCTCTTGCCTGTCATCC}$ 

 $A GATGGACATATTGCATGAAATAACTGAGACTGGAGTGGTTTAGCCAGAATTCCAACCTGGTTCTATCC\\ AGCTGTAAAACCCACATGCCTGCATTCAGCTCGGCTGCATCCTGCCAGCATCTTATTTCTTGGCTGTAT\\ CAGGACCAA\\$ 

 $\tt CACCATAGGGATTTCTGTCTTGCAGACTGTATGCTCCTTGCACGCCACACGTCTTATGTATCTCTGCCTCCATCAGGCAAGTGGCACAGTTATATGGCACTGTTCTGCACCTGGAATCTGGCCTACATCTAGTATTACCATCTATTTG$ 

 $\label{thm:condition} TTTCTGTTAGGCAAGGAACTGGGAAGAACCATAGAGATCAGCTACGGGCCCCAGGTAGGAAAGAGGA\\ ACCCAGGCTGGTTGAGGGAGTTTTCCAAGGCTCCAGAGCCAATTTGCAGAGTTAACCTGTGTTGACTGA\\ ACAAATGGA$ 

 $\label{eq:gamma} \textbf{GGTCTTGGTTGTCTCTTTGTGTGCTCCATTGAGGTGACCAAATTGCTAGTGATTTCAGCTGAAGGAACTACCCTGAGATGTGAGGCTTTCTGTGGGAGAGGCAGGAGGGATGCCTTATGGCCAATGGAGTCTAGAACACAA$ 

 $\label{eq:control} \textbf{AGGACTTCAAGCATTCACTTCTCTCTCTCTCTCTCTCTGGCAAATGAATAACTGAATCATGTGCCAATTGCTACACTAAATTTTGAGAAATAACCAAATCCATCACTAGTCTTACATATATGGTGGAGTGAGAAAATGGGGAAGGGCT$ 

 $\tt CCTGACCCCTGCACCCCCTCTCTGCCCCCCCCCCAAGGTCCCAGGCATCTTCAAGACCCTGGCCCTCTCCCCAGGTGCACCAGACATGATGCAGCAGCCGCGAGTGGAGACAGATACCATCGGGGCTGGCGAGGGGCCCACAGCAG$ 

 $\label{eq:condition} \begin{tabular}{ll} GCCTCCACTGCCTGCCAACTGTGATGTCACAAACTTGGCCTTGACTGCTTGGGAAGACCTGACTCCTCT\\ GCTGCTGTGCTTGCTGGAAGGCCCAGTTCTTCTACAGAGGGATCGTCCTGTAGTTTGCTTCTACATTCA\\ GGGCTTACA\\ \end{tabular}$ 

 $\tt CGTCTCTACGTGTTGGGGATCTCTCTCTCTGACCAGATTGCAAGTTCCATGAGAGTAAGGACTACCTCCTCATCACTGCTGAAATTCCCAGAACCTAGAACAGTGTGCCCAGAACAGAGTAGATCCTTGATAAATATTTATCAAGTAT$ 

 ${\tt TACATTGTATCCATGGACAGGGAAGTCCCATTGAGAAGACAGCATGGCAGCATGACTGGGATGTGTTCCCAGGCCAGGCCAGGCCCAGGGTCAGTTCCCAGCTCTACAACTGACGCTAGGCAATGGTGTTTCCTTGCTTTGCA$ 

 ${\tt CCTTTTCATGCTGTCCCAATTCCCTTTGGTATCCTCTTGATCATCCTGCCCATTGTTCTTCCTTAGTCTTGCAGGGAACAATGGCAGGGTAAGGAAGTCAAGAGCAGGACACAGTCATAGCCCAGCTTACTGGACCTAAGTGCA$ 

 $\label{eq:attcagccct} \textbf{ATTCAAGGCAGCCTGTTACTGGGAGCCCAAGCTGTTCAGACCCCTCCAGACCCATCCAAGCCTTTTCTGGTCAAAACCAGCCCATGCTTAATCCTGGGTCTCCTTCCAAAGTAACCCTGAGCCATTGCTGCAGTAG$ 

 ${\tt ACATTAAATAATTAGCATTCATGCTGCAATTATCTACCCAAAGACAACTGTGTGCCTATGGTGTACCAGATTCCACCCAAGGGGCAGGAGAAGCCGTGTTGACATGGCCATACCAGGCATGGTAACTGCCCAGTGGAGATCTTACAGT$ 

 $\label{eq:condition} \begin{tabular}{ll} ACCCAAGCTCAATCCACTCAGATGGAGCCCAGGGGGCCCAGGGGCCCAGGCCCACGTGATGCACTCCAGTGGCTTCCCAGTGGCTTCCTGAAGGAACCAGGTAGCATAACTTGGAGGA\\ \end{tabular}$ 

 ${\tt AAAACAAATTCCATTACCATTAAAACAGACACAAGGGGACAGGTGGGCAGGAGCTGGATGACACAGGGCCCTGGGGCCACAGCTGTGAGCATGGGTCATTTTAAATTCTACTCACCAGCTGGGGACCTTGGGCTACAACACTGCA}$ 

 $\label{thm:condition} \textbf{TGTTAGAAACAGGCTCCTGAAAACCCACCTAGACCTGCCATTTCAGAATCTCTAGGGGTGAGCCCAGGCATCTGTATCTCCAACAAGCTTCATGGGTGTAGGTGACATTTTGTTGAGATCTGGGGGCAAGAAGGAGCTCATCCTG$ 

 $\tt CCACAGCGTGGTCTGGCATTTACTGTGCTGCTGTCCATCTGGAAGCTGGTGACCTGGATGTGTGTTTTGTGCACCACCTCTGCACCACCTCTGCGCCCAATGTCTCAGCACCTCTCATCCCACCCTCTGCGTCTTCTACCCT$ 

 $AAGATTTGTGGTAGGTTTATTCTTGGTCCCTCTCCTGGAAGTGGAAGCTGCCCCAAAGACAGAATGTAT\\ GGCAGTCTTCAGTTCCAAGTGGGCCGCACACAAGGATACACAAGAAACTGATAATAGTGGTTACACATT\\ TGAAGGGCA$ 

 ${\tt GAGAGGTAACTAGGAAGCACAGTGCGTTTCTCCAAGGCCCCTGACATTCGTGTGACGTGCTCTTTGCAGTCATCCAAGCCCTGAGTTCCAGAATGCATGGCTAACAAATGGGAAGGGGAGAGCCAGCTCTGTGCCAGTCTTGTCTCA}$ 

 $\label{eq:condition} \textbf{ACACAATCAGTGAGGGGATTTGGGATTCTGCCTCCAGAGCCCACGGTCTTGGCCTTAGGGACTGATACCACATGGGCCGAAGCAATAAGCATGAGGTCAGGAGTCAGCGGGTTTGGAATCCCCCCTCTGCTCACCATC$ 

 $\tt CTAATCCTCTTTCCACCATGTAAGACTACAGGGGAGAAGTCAGCTGTGTACAACTGGTAAGACGGCCATC$   $\tt ACCAGGGCCCAACCATACTGGTGCCCTGATCTTGGGAATTCCAGCTGTCAGAACTGAGAACTACATGTT$   $\tt ATCTAAGCC$ 

 $\tt CTTTTCCCAGATCCCTCTCCTCACCACACATACACAAATACCAGCTCAAGTCAAGTTGCTTCAGGACCACTGAACTTTCCAGGATCATCTTGCTTCTTCCTGTCTGAGTATTGCTGGTCTGGACTTAAGAGAGCTGAC$ 

 ${\tt CATATACACTACACATAGACATACATGCAAGGGCAGATGCATGGGTGTATTCAACCTGCCTCAAAGTGGACCAACTCTATGGTGCAATTCATGGTCTAGTGTTCCCCATTGGATCAGGCTGAAACTAATGTCTAGCTATGATAACA}$ 

 ${\tt CCATCTTATTAACTCTGCTCCTGACAACACCCAGCCGAAGCCTTCCGCAAGAGCCCAGGAGTGTCCTTTGGCCAGACCATGTACTAAGTGTAGCATTCAGTTCTGGGCCCAGGTTTTAGAGGAGTAATGAACACTGGAATGTGCC}$ 

 $\label{thm:condition} {\tt GTAGGGGCTCCACAGAGATTTGTTCAATCAGTGAATGGGCGCGCAGGAGGGGTGGCTGTTGGCCCAGATGATGCTTCAGCAAACATCACAAGTGTCCTTTCTCTGGCTGATGGCTCGAGGCTGGTGCCCAGAACAGGCTGCTGTGGA$ 

 ${\tt AAGGCTCCAGCTTGACTGGCAGGGCTGTCCTGAGGGCCCTTCTGGTCCAAGTCTGTGCTCTTATACCCAAAGCAAAGAGCACAACCAGTCCAGAGCTCCTCTCAGCTTGGACCTGCCCCATGTCACTACCCAATCAACTA}\\$ 

 ${\tt GGAACCTGACCCCACTCTCCCTACCTCTTAGCATCTCCCGCATGATCAAAGGCAAGAGAGCCAGCTGTTTGCTTTCCTCCTGGGGAGGGGCTGCGATTGGGCAGGTGTTCTACATGCTCAGGGCAACTTCCAGATATGGAGGCAA}$ 

 ${\tt CACCAGGCACTAAGGCGTAGGCTGTTTTAGGGCACACTTGGCTGCCATTGCTCACCTAGAGGGGATAGGGGCCAGCTCCCAAATAAAGGGGAGTGGGTTCCAGGCTAGACAGCCTAAACGTGCTCCCACATGAGGCTGGAAGTGTGT$ 

AATATAAAGATGAGAGCACAAATATACAAAATAAAGACAAAAAAATACAAACGACTAATTAAATGAAGGA ATCTTTTTTGAAAACGTAAAATTGACAAATGTTTTGTCAGACTAAGAAAAAAAGAGAAAATTCACATAA AATCAGAGA

 $\label{eq:condition} \mbox{ACCTTGAGGGCTGATGGGAAAGCTGGGAAAGCAGTTGACAGTGTTGCTCTGGGCATGAGAGAGGCCAAGGGCACTCCCCCTGGCCTCTCCCAGTGCTCTCAGCTCCCACCTCCACCTCCACCTCCACCTCCAGCCCTTAC$ 

 $\tt CTCCATGTAGATGGACCTGTGTAGGAATAGCGTTGCCTGGTAGTGGGTGAATAAATCTGCTTAAGCATGGGGCTCAGTTAATAGGCTCATGTCTCATCAGGCTTGGGATTTAGCAGAGGGTTTGGAGCCTAGCACACTGGATTTTCA$ 

 ${\tt GATCTAGGCTCCTGTCCTCTGCCAGCTCTTCCCTTTTCCTTTACCGGCTCTTTACTGCATCGCAGGTAGCCAGTAGCAATGATGGAAGTGTTGATCAAGGTGGCATTAAGGAGGTAGTGCAAAGTTGGGGGGATTTGGCAGCCTAAAGGAGT$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} $A$ CACAGATACAAGGGGCCTTACCAAAAGGGCCCTGCC ACTTTGCTTCAATTCCTGAAAATTCCTTGGTAAACTTGGGGCTGCTCTATTCCTGACACTTTCAAAAAACTAGTTATTC \\ \begin{minipage}{0.5\textwidth} $A$ CAGTTATTC \\ \begin{minipage}{0.5\textwid$ 

 ${\tt AAACTTATTATAAAACCAAATGAATTAGGGAAGGGGTGATAATCTTCATTGCTTCAACGTTTAGCAGTAGAATTTTGGCCTGTTCTTAAACCTGCAAAGAATAAATGGTGTTTCACAGTGGATTGCTGTAATGTGACTGCAGTGCT$ 

 $\label{thm:condition} \textbf{GTTTGTTGTTATTTGCTAGTGTGCATAGATAGGAAGGGCTTTGAAGTATCACCTGAGGGTCTTTAGCTCTT\\ \textbf{CCTGACTGTAGGATTGACTGCCAAGATGTTGTGATGCTACTTTAACTGGCGGAGACAGGGACACTCAGG\\ \textbf{AAAACAGAG}$ 

 ${\tt TCTAAAATTGATTCTCAGTGACTCCCTTGATCTACATATGTTAAGGAAAGAGGGCAAGATGAAGATGTGTTAAATATTTTCCAGTTTTTAATAATCACTTTAATATATAAGGTATACCCAAATAATGGTGAATTAAATGACAAAGTATGT$ 

 $AGAAGCTGGGGGAAATGTTGTATTTTTGACATGTTGGATTTCAGGAGCCTAAGGCAAGTCCAGGT\\GGAGACAATGTTTCCGTAGGTCTGAGGCTCAGGGGTTGTTGTCAGGGTCAGTGATGCAATTAGGAAACC\\TAAGCATAC$ 

 ${\tt ATAATTAAATCTTACTCCATGCCTGCACCCATAAACCAAACTTTGCTGAAGATAATTACACTACCATGCTGACCATGCCTTCTTTAAATTCATGGTCACTATCTTCAATTTGGACCCTTAATGCTGCCTGGCAATACATAGGCAAGT$ 

 ${\tt CATGTCTAGCAGTGTCCTATAGGTTTGCTTAACCCATGTGACATTTGACACGTTTACAAGGTTATTCACTGCAGCATTTGTGACAGCAAAAGACTGGAAACAACCTAAGTGTCCTGTAATAGGGGACTGGTTAAACAAATTATGGG$ 

 ${\tt GATGTAGGGATCTAGGAGGTTTGTCATGAGGCCTGGGGGCACCTAGAGGCTGGGACTGGAGGTAGGGAAA} \\ {\tt TGGTTGAGGAGCCCTGGCTCCTCCCAACTCAGAGGGTCCTCACTCTGGGGGCTGACCCCTCACTCTTGACCCTTGCTC} \\ {\tt CCCTTGCTC} \\$ 

GGGTGACAGGGGGGGGGCCCGCGGAGGGCAGTGCTGGGCCCCCGGCAGCCCTGCCCCAGCAGACTGC GACACCTGAGACCAGCGTCAAGAAGCCCAAGGCTGAGCAGGGAGCCTCAGGCAGCCAGGATCCTGGAAA GCCCAGGGT

 $\label{eq:condition} \begin{tabular}{ll} ACTGTAGACCCTCTGGCCCTCACATTTTGAGCGTCACCACGCTGCCAGTAAAGGAAATGGCCTGAAACCCTGTTCTCCGGATATTGTTCAGGACATAGTAGCCTGTACTCACTGCCTGTTTACTCAAGCGAAAGGGCTCAGACTGCTT\\ \begin{tabular}{ll} AGACTGCTT\\ \end{tabular}$ 

 $\label{eq:ccaactactccaactcccaactcaactccaactccaactccaactccaactccaactccaactccaactccaactccaactccaactcaactcaactccaactccaactccaactccaactccaactccaactccaactc$ 

 $\tt CCCAGATCTGCTGCTTAACTACCAGGCTGTGCTAAGTCAGGATGGTCCGAAACCTTCAGCTCTGCTGCTGCTGAAAACTTTTCAGAGGGAAGCTTTCTTCCCCCTGGAGCTGCTGAGCCCAGAGCTGTGGGAGTCCAGGTAGATAG$ 

 $\label{eq:condition} \textbf{ATAGCTGACCTCTCCTAGCACAGCAAAGGACCACCTGTAGCATTGTAGCAAGGATTAGATGGGTGAGTACAAGGCACATGATTGAGCAGCGACCTGCATGGAGTACGTATGTAGCAATTGTTGGCTCTTGTTGCTA$ 

 ${\tt CCTTTCCATGCACATGCTGCCGTCCCCAGTTCACTTTGACACTCTGCAGATCTTTTGCCTGTAAACCAAAATGTACTGCTATTTTTTGGAATGCCCAAAAAGTGTCAGAGCACTGAGCTAGATGCTGTATTGTTTCATTTAAAT$ 

GCCCGGGAAAGGTCAATGCTAAGAGGAGCTCGTGGTCAAGGTTTCTAGTGCTCCCATAGGCCACAGGGT GGGATTGACTGGTCACTGTGGTAAACAGAGACCTCAAGGCCACCTGGTGACCCAGAAGCACAGCTGGGA CAAGCAGAG

 $\label{eq:condition} \mbox{ACTAGGCAACCCCTAGGAAGCAATGCAGTGTCATGCCTAACAGAGGGACCTGGATTAGAGGCCCAGCCCTGCCACCTCTGGATGTGCAACCCTGGGCAGAGCACTCCAGCTCTCTGGGCATCAGTTTCCCCATCTGCAAAATGGT$ 

 $\label{total} TTGATTCCTGGAACAATAGCCGAGATAATGAGGAGACCACTTCATTGACAATGCCCAGCCACGCCTTGT\\ CAGAGACAAGACAACATCGGTGCAGGTGTTGGAACAATCAAGTCTCATTTATCTGCTATTGTCCAAGA\\ ATGAGCTCA$ 

 ${\tt CATTGTGCAGTGTAACTTTAGAGATGTTCCTAGCTGTCCAACTTTCAGCCTAATTCTTAGACCCTTTCAGAGATTCTTGGGAGTCATCTGATGCCCTTCAATAAATGCTTAAATTATGTCTGCAACAGAGAACTCTGACCAATATATG$ 

CACGTGTGAGAACATTTATTGCAATGCTGTTCCTAGTGACCAAGAACTGGAACCAAAGTGCATATCCAT GAAATGGGGGTGGATATGAGTACTCACCTGAGTAGAGCGTGGCACGTCCACACCATGGGCTAGAACGTGGCCGCTAAA

 ${\tt TATTTTGTGTCACTCCCAAACAGCACCACTGTATATGTCCCCAAAATGGCACTTCTTTGTTAAAGCCCATTAAGACAGAAATATTTTTGAGCCAGATGCAATGGCTCATGCCTGTAATCTCAGTACTTAGGGAGGCCTAGGTTAGGCTTAGGGTTA$ 

 $\label{thm:condition} \begin{tabular}{ll} ATCATAGCACATAGCCTCCCAGGGCACTACCTCCCAGTGTAGGGCACAGCCTCCCTGTCCAGCA\\ TAGGGCATGACCTCCCTGTATAGGGTGCACCCTCATGGGACTGATCAATGGAGGCACTGCTTTCACACT\\ AGAACCTGG\\ \end{tabular}$ 

 ${\tt GCAGAAGACATCAGAGGTCAGAGCAGGAAATGAGGTTAGGAGAGTAAACTGAGGCCAGCTTGTGAAAGGCTTAACTAATGTCAGCTGGCATTAATTGAGTGCCTGCTGTATACCAGGCACCATTCTAAGCACCTTTCATGCATTAT$ 

 ${\tt CAATGACAAGAGCCCATCCCCTGTGGGCCGTCTGCCTTCAGACGGGAACCTTCTTGCTCGGGGAACCTGTTGCTCAAGAGCCCTTCCTAGCAGTACCCGCTCCTGGCAGCACCCTCAAGTGGTATGGGATTGTCTAAAC}$ 

 $\label{eq:condition} \textbf{AGGTGAAGCAAAGCTCTAGTTGGGGCAGGTGTTATGTAGGGTTAGTAGGACTGCTCTTGCTGTGCACTCATTGGACAAGCACCAAGGAAAGGATGGTGACTTCTCTGTTTAATTTGGACAATGCAGTAGGACAGCATC$ 

AAGAGCACAGGACCTGGGGACCAGGCAAAGGGCAGCTCCTCAGTGGCCCCTGGGTGTGAAGCAGGAGAA CCCCAGGTTGCAGGGAGTGAGATGGAGGGACAGCTGGAATGCTAAGCAAGAACACAGACCATGCCTGAG ACCACAGCT

 ${\tt TCACGCCTAACTGTGGGCTGGTTCTCAGTGTAGACTGCCACAGTGGGGACTGACAATTCCACCTTTTTAACCCCCTCCTCCTTTTCAGCCCCACACATTTCTTAGCCCTGCTTACCCCCACAGAACATGTATTTATGTTTCCAGAGAT$ 

 $\label{thm:control} \textbf{GCTTCATTTGAATATAGATATTGAGATGACCCAGCACCATGTATTGAACAGATCTGCCTCTCCCATCACCTGTGTGCATGGTGCCACCTTTGTCATACATTGAGTGTCAGTATTCCTGTGGATTCTGAATGGGAGGACTTTTTCTTC$ 

 ${\tt AAATCCAGCCTGCCTGAAGCCACCGTACTGGTTGTAACCACCACCCTGACAGATCCCACTGCAGGGACTTAACCATCAGGTGATATCAGGGACCAGGGTGTCAGTACTCCTGGCTTTGCGGCCGTGCTATCAGGGACCAGGGTGTCAGA$ 

 $\label{thm:condition} {\tt GTGCTATATGCCTGCAGGTCCTACCCAAGCATGCTTTACTGAGGAACTCAACGTTTCAGAGCTTGAGGTCAGGTTGATCATGGGCTTGTGACCATAGGCTTCCTTAGTATGCCAGGCTTGGAGAACCGTGAGAAAAGCAGGGA$ 

 ${\tt TCTGGACAGGTAGCTATTTATTTACTTATTTCACTATTTTCAGTAGCTAATAGAAATGGCATGTAGAAAACCTATATTCTCTTAAATTACTGTAGTTTTCACATTTTTGTCTTTATTATAAATTATGAGTGTGGCAATATTACCT$ 

 ${\tt AATCCTCAGCGTTCCTTGGTGTGCGGGTGCGTAACTCCAGTCTCTGCCTTCCTCATCACAGGGCATTCTCCTCAGACTTCACATAGCTGTCTCCTTAGAAGAACGCAGTTCTATCAGATTAGGGGCCCATTCTACTCAAGGATAGCCT}$ 

 ${\tt GAGGCAAAGAACCAATGTAATTAACAGATGGACTTGACTCATTTCTTTGCTTCAACAAGTGATGAGTTGTGGAGCAAAGAGCCTCCACGCCCTGCCTTGGTGAGGAAAGCTCCACAGGCCGCTGGGTCCATTGCACACACTCTGTT$ 

 ${\tt GATGTTGCAGTGACGTAGGAAAAAGCCATGAGCCAAGGAATGCATGTGGCCTCTGAAAGCTGGAGAACACAAGGGCATGGATTTGCTCCAGTGCCTCCAGCAGGAATGCAATCCTGCCCAAGCCATGATTTTTGCTCAGTAAAATT}$ 

ATTGGCACTGTGATTACATGATTACCATCCTCTCTCTCTACTGCCCCAGTTGCTCCCTCAGGGCAAGGAGGGTGTTGATTCACTCATCAGTGTAACTCCTATGCTAAGCCCATAGGAGGCACCCAGCAAATATTAGAGGGATGGGAGG

 $\label{thm:condition} \textbf{TGAACAGACGCAGCATCAAAGGGGAGCCGGCAGCTCACTCCTGAGCAAAGCAGCAGGCTAGTTCCTCACGGGAGAAACCACTGGGAGAACCTCCCTGCTTCTGCTGAAGACCTGAGCTGCTTCTCCCGGGTCCCCCAGTGC$ 

CAGACCCTAGCTTTCCAGCACCAACTCCAGTCAGCTCCAACTGCCTGTATCTCATCTCTGGGCCCGAAGGCTCTTTCAAGAACTTGAGTGTGCAGCAGGTCAGATATGCAGAGGGAATAGCACTCAACAATAACTGACAGGACCCAG

 $\label{eq:condition} \textbf{AGTTTCTTATTGTCTCCCAACGTCCCCCACACACACTGCACTAAAATGCAAACTTCACGAAGGCAAGGGAACTTTTGCCTGTATTGTTCACCTCAGTGTCCCCAGAGCCTAGGTCAGTTGTTGGCATATTGAGGGACATTCA$ 

GTCTGGAATACTGCCTGACTTGAGATTGTCACTCACCTGCTGAGTGGCAGTGGGCATGCCCCTGAGCTCCCCACTCCTTGAGCTGGACTCACCACATCTCAGAGTCACTGGGAGATCAGGTGACGAAACAGCCTTGAGAGTCAGA

 $\label{eq:attaca} \textbf{ATCACCAGAGCTACACAGATTCCAGCATGTTTCACATCACATAGATGGCTTGTTAAACACGGATTGTAGGACCCCATCCCTGAAGCTTCTAATTCAGTAGGTTGGAGGTTAGGCCCAAGAATTTGTCTAACAAATCAATGCTG$ 

 ${\tt AATGGCTAAAGCAAACAAGACTAGCAATACCAATACTGTAATTGGAGGAGATGTGGAGCAGCTGGAACTCTCAAATACTGCTGTGATGGAATGATAAATGGTGCAAACCTTTTGCTAAATTGTTTGGCAGTTCCCAATAATGTTAAA}$ 

 ${\tt ATTGTGTTAGAGGGGATGAGTCATCCCTCTCATGCCCTGTGGTCACCTGGTTGATGATCCTGGTGGGATCCTGGTGGGCTCCTGGTGGCTCCTTGGGGTTGAGAAGGATAACTCTTCCCCCTAAGCATATTGTTTCTTGTTTAGCTT$ 

 $\tt CTGGGTGGCTAAGGAGGCTAGACCCTTGGGGTGGGCAGGAGGGGGAAGAGGGTTCTCTCCTCCAGGGGAGCGCTGGGAGGCGCTGGGAAACCTCGGCTGTTCCTACTCTCCCCTATGCCCTCTTCCTGGTCTAGCACATTCAG$ 

 $\tt CTATAACTTGATGTCCCAAACTGGAGCAGTGGGATCTAAGACGAAAGGCCCAGGGCTAGCAGCCCAGGTTGCTTCTAGCCATGGTCAAGTGGCCTTAGGTCAGACCCCAACACCCCTCTGCCTCAGTTTCTTCTAAAATGAGATCGCT$ 

 ${\tt AAACTGGTAGTTAATCCCCAATCCCATCGTAGCCAATCTGCAACATTCTGGCCAGTTATTCACTCTATTCTGGAGTCATTTCTTCCCTTGGCTTCTAGGTCATCACTGATTTTGAGTTTGTGTATTTTGATTGCCCTGACTCAGTTG$ 

 ${\tt TACCAGAATGTATATTTCTTCCCAGTGGTTTCAGGAGAAGTCCTGGGATTTACTCTGATGCAGTGATTTGGGACACGGTCTATCCTTGAACCAATCATCATGGCTGAGGGAATGAAATATGCTGATTGGCCAGGCCTTGATCATG$ 

 $\label{eq:condition} \textbf{AAGGGTCTAATTGTACAGATTGAATCCAGGAGGTCTGAGTGCAGCTGGATAGTCCTTTGCTGGGATGGGAGGATCCCCATTCCCAGAACATCACCACGATCCCTGCTGCCTTCCCTTGGAGGA$ 

 ${\tt GAAAATAACCCAACTTCAGCTCCCTGCAGCCATCCTGTCCCACACTAGGGTGATGGCCAGGGGAGAGGACACTGAGAAGCACTGAGAAGTTCAACAGGGGCACAAGCTCACCAAAAGACTGAGACCTAATCATAGGACCTATAG$ 

 ${\tt CAGTCTCTGTTGCCATCCCCCAGCTCTGCTGCTGCTAGCATAAAAGCAGCCACAGACAACACGTAAACACACGTAAATTGGCTGTGCTCCCGTAAGTCTTCATTTGCAGAAACAGGCGGTAGGCTGGATTGGGACCATGGGTCTTGGTCT$ 

 $\label{thm:condition} TTAGGCATGGTGGCCATGTCCCGGTACTCCAGAGGCTGAGGTGGGGGGATTGCTTGAGCCTGGGATGTCGAGGCTACAGTCAGCCATGATCTCGCCATTGCACTTATCCTGGGCAACAGAGCGAGACCCTGTCTCTAA$ 

 $\tt CCCTACAACCTACTCTCAAGCCAAAGTCCCAGAGACATCCTCACACCAGCCCTAGAGGGTGCAAGGAGGTGCAGGAGGTGCAGCTCACCCTTATCTGTGGTGGGGCAGGTTGGGGGTCACTTGGGTGTCTACCCCAGGGACTGGGCGGCTGAGACT$ 

 ${\tt GAGGCTCTGTTCCTTGCCACATTCCTTTCCTCACAGTTACATCTTCCCATCACCACATCTTGC}\\ {\tt TTCCATTGTCATATGTCCTACAAAGACCCTTGTCATATATTGGGCCCTTTCTGACACTAGACCAAGATG}\\ {\tt TTAAATCAC}\\$ 

ATCCCAGCACTCAGGGAGACAGAGGCAGGAGGATCACTTGAGCCCAGGAGTTTGAGACCAGCCTGGGCAACCTGGGCAACCCCCTTGTCTCCACAAAAACGACAAAAAATTTTTAAAATGATAATAATAAAAAAATA

AGCAGGCAAGTTTTGTGTGCTGTTGGGGAGGAACCTGAAGTTTCACCTTTTCTCCCTAGCGACACTGTTCAGCTACCCCAGGCCTTATGCTGTCATCAGTGTCTCTCAACTGCAGAGGGATAGAATCATCCTCCCCACCCTGGAGGT

 $\label{thm:condition} \textbf{TGACTCAAGGTAACATAATCTTGCCAGGGAAGTCAGAACCCAAGGCATCCCTGTGCCATGTGCAATCTT}\\ \textbf{GCCCCTGCAGGTGCCTGTTTTTGAGGTCCTGATTCCAGTTCTGGCTTTGCTCTATTAACCAGTTACCTT}\\ \textbf{GCTTCTCTG}\\$ 

 $\label{thm:condition} TTACTGCGATTCAGGGCACAGGCCCTGGAGTCAGAGAATCAGCAAACCCTAACCCTGCTGCATCAAGTCCATGACTTCCATGTGCCTTGTTTCCTTTTATCCCTACAATGGGGACACAGTAGCTACCTTCTGGGTTCCTTGTGAG$ 

AAGCTATGCGTTTTCCTGATCTCTTTTTGTGCTTCTGTTTTTGCTGTGATAGGCTAGCCTGCTAGAGGA TGGCTGCATCGTGCAGCAGGCCAGGTCACCAAGGCCAGGGCTGTCCTAGATCAGCCACACTGCAGCAG ACAGACCAG

 $\tt CTTCCTGCCAGGCCTCCTCCAGCCTCCAGCCTCAACTCCTGGCCATGAATGTGTGCAGCAATGTGACAATAGCCATCACTCCTCCAGCAGGTTACTCACATCATCAAAGTTGGGGAGTTCGAGGAGATAAGAGACCTATGCAGATTCA$ 

 $\tt CCCATGTTTATTGAGCGCCTCCTTCACACCAGGGCTGTTGTTGCCTGCAGATGGGTTATCTCAGTTAGTCCTCATGTCATCCCTATGAAGTAAGGACTCTTGGTGGCTCCATTTACACACATGAGGAAAATGAGGCCCCAGAGAGGG$ 

 $\tt CTCAAATGCCACCACTCTGAAGCCTTGCTTTTCTCCCAAAAGCGGCCTTTTGCTGTCCCCATAATAATGCTGTTTTGAGTGTTCATTTCAAGGCACTGCAGCAGATTGTGTCTATGACCTGGCCTAGCCCAATAGCTTCAGGGAAG$ 

 ${\tt CATCCAGTGTACCTTGAGAAGCTCTTCTGTAATATATGTCTTGAACACTTCTGGCAGACCCCAACTGTC} \\ {\tt AGAGTTGCAGCAAATGCTAAGATATGGATGTCCAAGTACAATAGATATCCCAGAGCAGATACTCTCCTT} \\ {\tt AGAATGAAA} \\$ 

 $\label{thm:condition} \begin{tabular}{ll} TCACGTCCCAGGCCTTCCTGCGCCGGAAGGGCGCTGCAGAGAGGGACCCGCAGGAGCGCAGCTCACCGGGGCGGCTGAGGGCGAACCGAGGCGGTGAGGTCACCGATGGTGGACCACGCATCTCACGGCTCG\\ \end{tabular}$ 

AGATGCCTTCAATTTTGATGCATTTACTCACACCTAATTCTATTTCAATTTAACTGGTGCAGAGGCATT ACAATACCCTGTAACAAAAACCTGGCAGAAGATTACAACAAATTGCTTAAACGTCAAACCAAAGACTCA CATAATTTC

GCTCTTCCCCCACAGGAGTTTCTTTTGAAGAGAGGTCTGGGCAGTGCACCTCCATGGCCACCACTGGAA TCCAGGGTTTCCTCTAGAAGTTACATGACCACACCTTTGCTTACTTTTTTACTCCATCTTTGTTATAGA TCTGCAGAA

 ${\tt TTTATTACTCACAGCATAGCAAGCAGCATGAGCCCCGTGGTCGGGTCAGCTGCCCATTACCTCCCAGGTCCCAGGGAGCCAATGAGGAGCCATAGGGATTCTGTGCCTACCCAGCCTTGCCTCACAGCTGAGGAACCCACCTT$ 

 ${\tt CATTTAGATCTGCTACATGGATTCCATTCAGTGGCTCAGGTGATGACCTGGGGAATCCTGTTCTCACAGTGGAGGCAGGAGTGCAAAAGGATTGCAAAAGCACAGTGGCAGCCTCTGGGCCAAAGGAAGTCAAACGGCCAAGGTCCAA$ 

 ${\tt CCGAGAACAAGATGAGTCCCAGATGCTTCTGCCAATTTTTATGTCTTCCTGCTCAATACATCAGAGTGCTCATGCAGCGGGAAGACCAGATGGACAGGTGGAAGGCAGTCTGGCAGCTTCTCTTTTGTAGTCTTATGCTCTCTGTGA$ 

ATGAGATTTGCAAAAATCCTAGAACGTCCTGCTCTGGAAAGTCCACAGTCTACAGTGATAGGGAAACAT CAGAGGTGCAAAAGGAACTTGGGGATTTGCTATGGGGACTCAAAGGCAGACACATAGCTGGTCCTAGGA CATTAGAAA

 $\label{eq:control} \textbf{ACATTCCTCTTGATAGAGCAGTTTTGAAACACTCTTTTTGTAGAACATGGAAGTTGGAAATTTGGACATCTTTGAGGCCTTCGTTGGAAATTGGACATCTCTCATATAAAATTAGACAGAAGAATTCTCAGAAACTTCTCTGTGATGTG$ 

 $\label{thm:control} \textbf{GGCTCTTGGGTGGGGATTTTGCTCTGTTGCACTCCTGACTTTTACCATAGCAAGAACATGCCTTGGGTATTTGTAGGACCAGGGGCAAGAAGAACACATGGAACAGACCTAGGCCCAACCCACAGCTTGTGCCAAGTCCACCCAAG$ 

 $\tt CGTATACTTCGTTCTTGCTGTGCATACCTGAAATCCATGCAGACTGGAACGCACTGTGCACAGTTGT\\GTGGTGACTGACGCCTGACCGCTTCATCATGTGTCTTAGTTCATCTGGGCTGCTGTAACAAAACGCCTT\\AGATTAGGT$ 

 $\label{eq:condition} \textbf{ACTTGTCCAATGTCACACGTGTTGGAGGCCCCAGAATTAACACTTTCTCTCATGGTCCTTACACACGGGTGCTCACTCCTTGCTCTCATGGCAGAGTTAAATGGGACTGAATTCCTTAATGGTAGAGGTCACCAGGAAAGGGT$ 

 ${\tt CCAGGAGGGCAGGGATACCTCCTCTCCTGCTCTTGGAGGGGGTCTTTCCCAGTACCTTGAATGGCCAACTCGGATTGGCTTCCACAGTGCCAAACAGGTTGGTGTAAGGCACTGGTCATGCCATGGATGAGATGGTGCATGCTATGA}\\$ 

GCTGGTAGCAAGTGTCCCTCCCCAGACTCCCACATCCCCTACAGTTAGCTCTACAGTGGCCCTCCCAGC CATCTCAAACACCGAGAGCTTCTAATTGGCAGGAACCACATCTCATAGGATGCACAAAGTGGAATGGAA AGGGAAGTG

 $\tt CTGACTCAAGAACAAGGCCTTATCTTTTATGTCCTGGATCCCCAGCATGCTCTGCGGTACCTCAAGAAAACAGGTAATCCAGCCCTGTACATCTCTTGGGGTCGAACCCAGCACTGTGGATGTTCCAGGCCTTTCATTCTTGTGAAG$ 

 ${\tt CACGTGGCTCTGACTCTCTGAGACTACTCTGTTTCTCAGCATCTGATAGAGATATGGGACAAAGAATCATTACAAGTGCCATGATCGCCAACAAGAACTACTTAGCCTGTGGTTCTGGGAGCCAATAGACAAGGGTGGGGCTGTGGT$ 

 ${\tt GAATGGAATGGAATGGAATGGAATGGAATTGAATGCAGTGTAATGGAATCGAAGGGAATGGAATTGAATGGAATGGAATGGAATTGAATGGAATTGAATGGAATTGAATTGAATTGAATTGAATTGAATTGAATTGAATTGAATTGAATTGAATTGAATTGAATTGAATTGAATTGAATTG$ 

 $\label{thm:condition} \textbf{TTGTGTGCCTAACCTGAAAGACCCTATCTAGTTCTAGCCTTTAAATTCCTTCTGTCACCAAATCT}\\ \textbf{GGAGTTACATGGCATCTGTACAATCTGGGTAGCTGAGGCATGGGATCAGCCCTTTAAAGGAGATTTTGG}\\ \textbf{AGCTTTCAT} \\$ 

 $\tt CTTATCTCCAGTGTCCCTTCCTAGGTGAACTGAGTAATTTGGTATATCCCGTTGGGTCAATCCCAAGTTTCTCACCTATAAGTCTTGATGCAAAAGGGAGACTGCAGTCTTTAATACTAAATTTGCATATTAAACTATCCATTG$ 

 $\tt CTCACACCTCACCTTTGTGATGAGATCACACTGACTTCGTATTCACAATTGCAATATCCCCTAACCCTGTGCTCCCTGTCTGGCTCAGGCTTGTCATGTCACCTTGTCACCTTTTGAGTGCTCATGTCACCTTCTGTCCTATTTGAGTCATGATGC$ 

 ${\tt GGGTCAATAGCCACTTCCTCAATCTTCTCCTTGCACTACCTCACCCAGCACAGTATCTTCTGTGGCTCACATCAGTTAGGGAAGCACATGGCTTCAAGTACAGAGCCCCCAGCTAATGGTGAAGCAAGTAAGGAGTCCTTT}$ 

 $\label{eq:condition} \textbf{ATATCTCACAGGCCAGCCAGCCCGGATAGGCATGCCATCCTTTGTCCCACAGCAGGTCTAGAGGATCTGCGATCTTGCCATAGTTGGGGAACTATCCTGTCAGTGCTGAGATCTGCTGAAGA$ 

 $\label{eq:condition} \textbf{ACCCTGGGATCCCCGTTCACCTTGTCAATTTCAGTTCCTCTGCTCCAGCAGACCTTCTTCTTCATGTCCTTGAAGTCCCTGTTTGGGGCGCCACTTTGTAGAGTACCTGATTCTGTCGCTGATCGGGGGGTGCCACCTGTAACCTGCAT$ 

 $\label{thm:cagact} \textbf{TTTCTAACCAGAGCTGACAGTCACAATGTCTTGACAATCTTACATGGACAAGGTCACCCAAACCAAATTCTTGCACTCTCATACCTTTGAACTCTTCATAGCAACTTGCTGCTTTATACAACTAAGCTCCCAGCCCATGCTTGACT$ 

 $\label{eq:condition} \textbf{AAAAGAGGCCTTAGACGATGCTCTACCTGAAGCCTGCACCACGGCGGACATGGCTCAGATCCCTCTAGAACAGTTGAGCTCCATATGTCTCATGGGTCTGTCATTTTGGCTGGGAGTTCTGCCCTCTGCCCAGCTATGGGGAAGG$ 

 ${\tt AAAGTTGATTTATTGGGGGAACTCACAGACAGAAGCATGGTCTTGGGCCACTGCAACACAGGTAGATCTCCACATCTGTTACTCCCAGACCTAAGACTTATGTACTATGAGAAAAAGGTGTACATGCTCTAGCAAGGCAATTAAAGG$ 

 $AAATCAGTAACATCTCTATACACCAATAGCAGACTATCTGAAAAAGGAATCAAGAAAATAATTCCACTT\\ AAAATAGCTATTAAAAAAAACAAAATACCTACCAGTAAATTAAGCCACAGAAAGATGAAAATAATTAAAC\\ ATTGATAAA$ 

 $\label{total} TGGTTTTGTTAGAAACTTCAGAGAGGCTTCAAAACAGGCTCCAGTGACAGCTGTAGCACCTTCTA\\ GCAGTGTGACATCTGGAAAACTGCTGAATATCTTGGGGGGCATAGCACCCTCATTTGAGAGCTGAGAAAA\\ TTGAACTCT$ 

 ${\tt GACTGAAATGGCCTCAGGTGCTCTAATCAAATTGAGACCTGGTCCAATCCCTGTGGGCCCCTAAACCAA} \\ {\tt AGGTGAATAAGGTGCCTGCCTAGCAGGAGGTTGTGACCTCCAGGCTGATGGTGGGGTGAGAGCTGGGAGGTCTGGATGG} \\ {\tt TCTGGATGG} \\$ 

 $\label{eq:attcacc} \textbf{ATGCATCAGTGTCACTTGGTTGATCAGACTCTCAGCCCAGAGTCTCTGATTCAGACCCAGATGACTCTAATCAGACTCGCATTTAAGGCCTGATCCCTCCTTCAACCCAGATGACTCTAATGCAAGTGGT$ 

 ${\tt AAATAATGCTATGGTCGATTGTAAAAACGTCCACAAGGTCTTCCCCACTGTACATTCATGGCTTTGCAGTGCCACTGTACATCATGAGTGGGACCATTTCTCTATCTTTTGAATGTGGGCTTGACCATGTAACTAGTTTTGCCA$ 

 $\label{eq:condition} \textbf{ACCAAATGAGTGCTCAATGCAGTCTTGTTGGATGAGAAAGTGCACTTCAGTTTTACCTGCCTCGAGGATTTTAGACCATCACTCTCCTAAAATCTTGCACCTTTGCTAATGCTTCAGTTCACTCCTCAAGCACCTGATGAGCACCTTG$ 

 $\label{thm:condition} \textbf{TGCTCACTCCTCCTCCTCCACCCGCTGTGCCCACTGAACCCTTGCTTTGCAGGGGAGGAAAACTGTCTTTTCCCTCTACCCATCTGAGGTTCATTGGCAGGGACCTCTCTAAGCGAAGACAGAGTCACAAGGACAAG$ 

 ${\tt GTACTGATATTGGCTCTGCCCTTTGATACTAGGCTTTCTGGGTCACCATGTGGTCACTCTTCTGTCAGCAGCAATCCCTCACCAACCCTCTCTCAAGCACAGAGACTCATCCCCACCTACTTGACTGCAGTCTTTCTAAAATTTTAT$ 

 $\label{eq:condition} A CAATAAGGTTAAGTACCTTGTCCAAGTCACACAGATAGCAGAGGTAGAGGCAAGATTTGAACTTTGGCTGTCTGGACACCAGAGTCCATGCTTTTAATCACTGTGACTGCGTGGCTTGGGGAAGAAGTTCCTTGTCTATTACCAAA$ 

 $\label{thm:condition} \begin{tabular}{l} GCATCCCTCCACCCTATCCTGTTCCAACCACGCATACATTCAACCAGGGGTAAAGCTGGGATTCAGAT TTGGATCTCTTTATTCCCAGACACGTGCTCTTCCCATAGGATGCAGACCAAAGATGACTGGTTAGTAAT TTGGTCTGA\\ \end{tabular}$ 

 $\tt CTAAGGAGTTGGCACTACTGCCGCTGTTCCTCCCTTTTTGTTTTGGACACATCCATTGGGAAAAAGGGATACAGGATCCCAGCCCCCATCTTAAGACAGTGAGCATGGCCAAGGTCTAGGCTGGAGGACTCCTGGGCTGACAATGCC$ 

 $\label{thm:control} TTTGTACTCGAAAGGAATGGAATCAAAAGGAATGGAATCGAATGGAATGGAACTTATGTAAGGTATTC\\ GAATCGAATGAAATGGAATCGAATTGAAGGGGTATGAATGGAATGGAATGGAATGGAATCGAAT\\ TTAATGGAA$ 

 $AGATCTCATGAGAACTCTATCACAAGAGCAGCGCTAGGGGGATTATGCTTATCCATTAGAAACTGCTCC\\ CATGGACCAGCCACCTCCCAGCAGGCCACATCTCCGACAGTGGGAACCACTGGAGGCTGCTCCCATGGA\\ CCAGCCACC\\$ 

 ${\tt CATGTGTGTGTGTGTGTGTGTTGTATGTATGAGCATGTTTTGTGCATGTCCCTGCAGCTGCAGGTGCGCAGGTGCGCACGTGCCTAGTATGTACCTGTGCATATTTCTGTACACATCAGCACATGCTTATACACAGTCGCAAGCCTACGTA$ 

 $\label{thm:condition} \textbf{GTTACAGTACCGAGGAATTATTCCAGTTATGTGTTACACATGAGGATTGCTGCACCTCAGTCCATGGATTCTGCATTCCATTGCTATGGGGTGAGGTCCAGAATTCTCACTTTGTAAAAAGCAAGAGAAAATTCCGACATAGCGAC$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} ACCGAATCTAGCAGCATCAAACAGCTTATCCACCATGATCAAGCGTGCTTCATCCCTGGGATGCAAGGCTGGTTCAACATATGCAAATCAATATCCATCATATAAACAGAACCAATGACAAAAACCACATGATTATCT\\ \end{minipage}{0.5\textwidth} TGATTATCT\\ \end{minipage}{0.5\textwidth} TGATTATCTT\\ \end{minipage}{0.5\textwidth} TGA$ 

 ${\tt TACACACAGTAACGTGATCTATTCTGTCTCCAAATTTTCCACTTACTAAACTCAAGCATGTAAATACCAGCACCCAGCACGTGTTTTTGGAGAGTAGCAGGTTGTATGACAGTTGATTTTTTTAGGAAGACACCAAGATAGCTTTAAT$ 

 $\tt CTAAGATCTAACATGAGATAAGCCTATTTCACAGTTAGTCTCGCCACTTTCCTCTAACACAGGAGGGAACATGGGAGACTGTTTCCTATGCCACCCCCAAGACTTAGTACATGAAGAGGCTATATGTGTAATGGTTTAGAAAACGAA$ 

 $AAAAAAAGATAATGCTAGGAGAAAGGGAAGAGGGCAAGAAGTCTCCCAGATTTATGACTGGAGCAATGA\\GTGGCTGGTAGTGGCATTCATTGAGATGCTCTTCCAAAGCACCTGTGTTGGCCTTGTCATAAGAACTTC\\TCATACTCT$ 

 $\label{thm:condition} TTAACCAAATCTTCATCTGTCATTGCTTGGAAGCTTCTAGGGGCATTATCTCCAGCATTTCCAGCTTG\\ CCCTGTATGGGAACAGCCAGACAATTGCCCTTAACCAGAGAAGCACAGGTAATCCCAGAAGAATGCTTG\\ GGAGGGAGA$ 

 $\label{eq:ggttcat} \textbf{GGGTTTCATTGTTAAATATCAGCCTTCCATATTAGGTTATGAGACTCACGAGGACAGGCACTGTTTCTATTTGTTCACCACTGTACACACCGTGCATAGTGCAGAGTCTGAGAGAACACAGTTACTCAATACATGTGATGGGAAGG$ 

TATGAGTCCTTCCCTGGGTCCATCACAGGATAGGTCAACCTTTCTGAGGGTGAACTGTGCTGCTATTCT GTGCACTCTTAGCCTTGAGGAGGTCAAGGCATGGCTGACAGTGGAGAGGCATGGACAGAGCCTGGATGT GCGTTGGCA

AGTGAAGATTGATTTGACATCACTATGTGCTCAGCATGATGCTAGGAACACAAGAGTCACAGCAATATG GTCTGAGCTCTCAGGGAACTTGCAATCTAGCTGAAGGGACAAAATCAGTGCACATCTAACAGCAGCACA GAGTAAAAT

 $\label{thm:condition} \textbf{GGACGATCCTTCTCTGTGGGGTTCATAACCTGTTAAGGAAGACCATACTCTACTCCACATACACATACTCTCTAATGCAATGTGATAATCAGTATAACAAATCCACCGTCACCTCACGGTGCAATATATTCTGATTAAAGGATGGTT$ 

 ${\tt TAATGCATCTGGCCAGGGGGTCAATGGTCGCACAGCAGTGGCTGAGGTTGGAGGCACCTGGCGTCATCCTGCCCTCACCTGAGGTTCTGCTGCCATTCTCTGGTCCTGGCCCCTGTCCGCTTCTCTTCACTCCCCTTGCCATTACCTCT$ 

ATAAAAAGCAGAGATAAATGATTACAGGACAAAGCCTGTGCACTATCGTGTGCTCCCAATGTCTGCTTTCCCTGGGCTGGTGGAACACAAGGGAAAAACTGCACACAGATGCACTCTAGGTCTTGCTGTGGACATATGCTCTCAT

 ${\tt CATGGACATCTGCCTCCTGGTTCCTGTTTGGCCCAGTTCAGCCCAGGCCGACCTGCAAAACAGAGCAGCTTTGGAGGGTGGGCACGGCCACACTCCAGTCCAAGTACTCGTCTCCAGGGCATGGGCAGATGGGCAAGTTCTGTAGGA}$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGTGGGGTCACCTGCCTGTCTCACCAGGGGGGGGGCCACATCAA\\ AGCCACCAGCTGGTGATGGAGGGCACGTAGGGAAGATTTGTTCTGCCTGGCCCCTTAGTCTGAGGAT\\ TGGTGAGAA\\ \end{minipage}$ 

 $\label{thm:condition} \textbf{GCTCAGATCTCACTTTCTGTTTACACTGTCCAGACACCCCATAGTCTTGCACTCTCACCTTTGAGTGATACCAGAGTCCAAGGCCATTGGTCAACTAATGTGTAACCAGGACCATTAGAATCCAGAGGATGAGAAACTAGAGATG$ 

AAAGTGCAGAGTAGGGAAAGGACTTGTCAGAGCTGGGAGACACTGTTGATAAGAAGAACTAAGCAGTGG TGTGGCCATTTCATCCTCACAGCAAAGCTGCGAGAGGGACTGATTCTTCCCATCTTACCCCACACGGAA GCTGAGGCT

 ${\tt ATCAATAAGGTCTTTGTGACATGTACCTTGTGAAACCAGTCCTGCCTAAGGGAGCGGGGCTGGCGGTTGTCAGAGTGAACAATTCAAAGTCAGGTCCTCCTCTTGGAGCTCAGAGACTTGAAGAGCAAGGACCACTGTCAGGACA$ 

 $\label{eq:colored} \textbf{GCCTCCTCCAACAAGTCTGGAATCTGTCCAAATTTAAATTAACAGGTACTTCTATGAATTCCCTCAGAGAACACACTGTGGATGCTTTAGAGACCTCTTCCCATGCATCCTGAATTATCTGGGTTGCATATGGTGGCCATAAGTAGT$ 

 ${\tt CAGGCCAGTGGGTGAATTCCCCAGCCATTGTCTCCCACAGCATGGTACCAGCAGCAGCAGGAGTGCTCGTTCTTCTCAGAAGACCCTCGCATCTGTGGGAGCTGTGCTTGTTGGGAGGCTGGGTTAGTTCAACTCTCACAGGATGAT$ 

 ${\tt CATCTCCCAAATAAACTACTTATACTCAGATTCTTATCTCAGGGTTTGCTTATAGGAGATCCCAACCTAAGATAAGTCCTTGACCAGGTGGCAGTGGGGCTACAGAGAAGCCTCCAATGTAAGACATATCAGAGGTTGGTGATGTTT$ 

 $\tt CCTCCCCGCCAGCCTTCCACAGCCATGGCAGCCTACGGCCAGACGCAGTACAGTGCGGGGATCCAGCAGCCTATGGCACCCCCTATACAGCTTACCCACCTCCAGCACAAGCCTATGGAATCCCTTCCTACAGTGAGTAGTAAACAAGTCC$ 

TTGGGGCGGAGGCGCGTGCCCGCCTTCCCAGCTCAGCCCCGGCAGGGCTCCCGGCTCCAGCCCACTGGGAGCTCGCGGCGCGCCCCAGCTAGGCTTCGGTTCACGGGCCCATGCAATGGGCCGAGGCAGGGCCCAGAAATGG

 $\label{thm:condition} \textbf{GGGCCTTAGCCTGATGTCATCTACCACTTCCCATGTAGCTCTGAGCAGGTTATTTGACCTCCTGTGTGCCTCAGTTTCCTCCTCGTGTGCAAAATGGGGCCAGTGATGCTGCCCAGCATCATTGGTAGATGGCTAATAGT$ 

 ${\tt TAGTGTAAGATAGGAGCTGTGTCCCTGAGGATGCATGGTACCCTGCCAGCTGGACAGCGCAGGCTTGTGTCCCGAGAGAAAAGTACGTTTCTACTCTGTCGAAGCCTCTGTTACTCTGAGCTTTCTCAGGAACGCAGCTCTAACCA$ 

 ${\tt CCAATGCCTATGTGTCAGCACTGCTATTAGCAGAATGGAGAAGCTGCACTGTGGACACCTGCACCAGACAGGGCCCTGGAAGGAGGTCCCAGATTAGCACCTTCTCACTTCTCTGCAAAAGCAATAGCATCCCATATA}$ 

 ${\tt CCTAAGTTAACAGAGTCCTGCAACACCCTCTCTACTAGATTAGGTGGCACATCATGTGACTGATGTGGTTCATTAGGGAGCCAAGAGAGACCAGAGGAGCTGTGAGAGCAACTGGCCAGATCCCACAGGAGCTCAGTGGGAAGCA$ 

 ${\tt AAACGCAATGCATTGGTCTAAAGAACGCACTTGAAAGTTGCAAAATTACTTGCCAATGTTTGGGTTTCT}\\ {\tt GGTACATTCTGAGCATAGCAGTTGGTTCAGTGCAGTGTCTGCTTACCAGTGCACTGCCAGGGTCAGGGATGGCTAAGC}\\ {\tt TGGCTAAGC}\\$ 

 ${\tt AAGGTGAAGCCCCTTCTCATCACATCCTATCAAAAAAGTACGCACTGTCAACACGAGTTATCACTGTTGATGTTGACCTTGATACCCTGGCTGTGGGTTGAGGTTGTGTTTGCCAGGTTTCTCCACTTTAAAGTTACCTTTTTCCCTT$ 

CCTGGGCAACACGAGACTCCGTCTCTAAAAATACAAATAAAAATTCCCCAGGTATAGTGGTGTGTACTCTCTCAGGAGACTGAGGCAGGAGGATCACTTAAGACCAGGAGTTTGAGGCTGCAGTCAGCTATGACTGCACCAC

 ${\tt CAAACACTGCAGATTACATTTAGAAGTTATTTGAAGGCCATTTGATCAGCCAAACACAGCACAGCACCCCCTGAGCACCTGCAAGGTTAGAAGCACCATGGCTAGCCTCTGTTCTTGTCCCTGAGGAATCTACTTGCTCCTCAAATCAT}$ 

 ${\tt TAAGACTGGCCTTCCTCAGGAGAATCCAAGTGTGTCCTTCAGGGTAATGCAGGTAAAGAACCATGGTGTTAAACTAGAACTTAACTCTGACCTAAAGGTCTACTGCAATTTCTCTTATGGCACTGCGGGATTTTGCTGAGGTGGTAA}$ 

 ${\tt CACTTCATGGGAAAAGACTGTAGGGTGACCAGTCATCCCAGTTTGCCTATGTCTGAGAGGTTTCCTGGGATGTGGAACTTTCAGTGCTAAATTGGAACTTTCAGTGCTAAATTGGGGAAATTGAGATGGCTGATCACCCTAAATTGGGGTGAGAAG$ 

 ${\tt GGGAATAAGGCATTCAGGGTAGATATAATACTCCAGGTACAGTTAATGACATACAAGTTTGCCGCACCACCACCAAATGAAAATGGCAGATTTGTGTTAGGGAAATGCAAATTAGAACTACAATGAAGGCCAGGTGCCGTGACTCCCGTCT}$ 

 $\tt CTGTCAGCCATAGACATAGGTAGGCAGTGGGTGGCGTACGGCCTGGTGTCTGGAAGCATTTGAAGGAAAGATGTCGCTTTATAAAGGAAGAGGTGAGACTGTGTTTGCTAATAGCTCCAAAAGCTCCAAAAGATGCCCACGTCCTT$ 

 ${\tt TCCTTTAGCCAAGTAGTCAGGTAAGATGCTGCACTCCAAAATTTTTGGTCAATAGATGTCACTACATGGGTCAGTTGGCATGGCATGGCATGGTCTCTCTGAAAGAGTGACACCTGTTGCCTACTTGCAGGTCTTATCCTTCTTGTACTGTT$ 

 ${\tt TCCCGGGGAGAAGTGCTGGGGGCCAGAGCCACCCATGTCACCACTAGCCATGGTAGTCCTCTCCCCATGAGGAGGCTGCACCCTGGGAGATGGCATCGGGTGGAATGGAGCATCTGTCCTGACCTCCCCGTTAAGCAGAGGTGGCT$ 

 $\label{total} TTGATACAAAACTTCAAGTGATCCTCTCCCTGTCCCTTCCCTTCCCTGGTATCCTTGGTGTCTTAGCAT\\ GCAGCAATGGTAGAGTAACTCAGGAGAATGAAATTCAGCTTTAGAAATCTATATAGGCGACAGGACATT\\ CTATTATTT\\ \\$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} ACAGTACAAGTTTGGAAAAGTTTCTCTTTTTCTGGAACTGCGGCAGAAGGGGATCTCAGATCAACCTCAGGTCAGCAGCAGCAGCAGAAGCTCCATTTCACTTTGTTTAGAGAGGGTTACAGATAAAGTACGTTTCGTTGT\\ \begin{minipage}{0.5\textwidth} TTTCGTTGT\\ \end{minipage}$ 

 ${\tt TAGTAGAGCGGGATTAGAACATGTTGCCAAGGCTGGTCTGGAACTCTTAGGCTCAAGCAATCCTCCTGCTTGGCTTCCCAAAGTGCTGGGATTAGAGTTTTGAGCCACCACGCCCAGCCCATGATTCTACTTTCTGCTTTGTATGA$ 

 $\label{thm:constraint} \textbf{GGCTCTACCCAATGCTTTGTCCTAGTAGAATTCTCCCTACCTGGGTTAGATCTCCCCAGAAGCAGACCCTGAGAAAAAGTGTTGGAGTGAAAGCAGTTGGAAGGTGATCCCAGGAATTA$ 

 $\label{eq:contract} AGCACTCACACAGGCATTCTGTCTCTAAAGCTAAACTACCCCTACACTTAATTAGCTGCCATCTGAT\\ ACCTGTTGTATACGAATTGCTATGGCAGCAAATAGCCAGTGAGGGCAAGGTTCAAGGGAGGAGATGGTA\\ GTTGAGCTG\\$ 

 $\label{totagc} TCTGGCCTCCTCAGCAATCAAAGACTGAGACTATCTAAAGTGTGGAAGCTCAGGACCCTCACGTCCCTCTCGTAACCCCAGGCTTTAGAGGAAATCAGGGGTTCCCAGATTCCATATCTCACATGGGCCTCATCATTCCA$ 

CTGAAAGCCTTTATAGGAAGTGAAACTGCCAGGTCTTTTTCTCCATCCTACTCACTTAGACAACTACCC
TTTCATCTCCCTAGCAGCCCCTGGGACAAAATTGAGGTAGAGAAGTTCCAGACACTGAGATACCAGGCA
CAGCTAAAG

 $\label{thm:condition} \begin{tabular}{ll} GCAGACTCACTCATGCTGTACATTTGTTAGATCTAGGTTGAAATCTCAGTTCCCCTGTTTCTTGGGTTA\\ GGTTCCCCAGAAGGAGGATGCTTGTTCGGGATCAACACTTGTGAAAGGCAGGAGGAATAGCAGGTTTGGG\\ CAGAAGGAA\\ \end{tabular}$ 

 $\label{total} TGGATAGACCAAGGCTGAGTTTCAGTGTGTGGGGTCTGCTGACTTATGGTTCATCCTTATTCCTAAT\\ GTGAGTCCTTCACAGGCCCTCCCATCCTTAGCCAATCCCTGTCCCCTCAGAAGACAAAGCCCTCATAAC\\ CATCACTCA\\$ 

 $\label{thm:capacity} \textbf{GCTAGCTCAGAGGACCTTACAATAATAATAATGATAATGTGCAAATCAAGACTCCTGTGAAAGTGCAGCTTTGGTCTGTTGTAATCATGTCACCTGCACAATGCTCTCAGACTTGCAAAGCACTTCCTCATTACCTTGTC$ 

CCTAGCAAAGGGAGCAAAACTCTTAACAATCTACTTCAGTGCATCTCCATAAACAGTGGCCGTCCAGCA CCCCTGGGAGGGCTGCCCTGTGTCCTGTAATGAATGCAGGCCCATGGAAAGTATTGTAAAGATCCACAG CCCTACAGA

 $\label{thm:continuous} \textbf{TGCCATCTGCTGATTTTTGGCCAGTTTTCACATTATCCTGTCTGGACCAGATCCTCCTTTGGTCAACAGGGTTGTGACTAGAAAACAAGTCTCCTACCTCACTTCCAGTCATTTCCCACCTCCCCAAGGCTACATCTGACTCTTAA$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} $ACCAAAGGACAGCTTAGCATCTACCCTCTCGCCAAGTTTGCCTACCAATCTAAGTT\\ $TGGCTTCTCGGTCTTCCCTGACCTTCACTATCAAACCAAGTCTTCACAGGAGATGAAACACCCTTTCTGT\\ $GAAACACAG\\ \end{minipage}$ 

 $\label{thm:condition} \textbf{GTTGGCACAAGGGCTTGCTTTTCTCTTACCTGACTCAAACTTTCTCCAAGGCATAAGCAGTTTCCAGAT\\ \textbf{GGTGTTTGTTGAAAGCATGTAAAAGCAAATGTATTAGCCTTAGCCACCTGAGACAAAGGATGACAGTTG\\ \textbf{GAGCAAGCA} \\ \\ \textbf{GAGCAAGCA} \\ \\ \textbf{CACCAAGCA} \\ \textbf{CACCAAGCA}$ 

 $\label{thm:condition} \textbf{GACCAGCACTTACTACTTCATCCTCACTCTGGTCTGAACCGCTATCATCTCATGCCTGGACCATTGCAATA\\ \textbf{GACTCCTCATTGGGCTCATCTCATGCGTGGACTGTTGCAGTAGACTCCTTACTGGACACCCTGCTCTCA\\ \textbf{TTACACCTA} \\ \end{array}$ 

 ${\tt AAGGCTTTATCTGTCACCATCTGACATGCCTGTGTCTTAGCATGACAGCTAGAATACACGCCACCTTGTGCTGTGAAGTCCTATCATAATGCCTTTGGTGTGGTAGACCAGAACAATGTCCTGCAAGATAGTGAGATAATGAAGTT}$ 

 $\label{thm:condition} \textbf{GGTCAGCCTAGGTTGCCTGTGACACTCTGAAAGGCCTTAGGAGGCACAGCATCTCAAGTGCACACCCGAGTATGGCGTGATCTGCAAGGGGAATAGGGCTGGGGGGGAGACATAGGCTTTGAAGATGAATCAGGCTGGAGCAGGGT$ 

 ${\tt AAGGGCAAAGAGGGCAATGACCATCACTGGGGATGCTCACCGGGTCCTGGGCCTAAAGTCCACTCTCCC} \\ {\tt AGGTCCTCCTGCTTTCCTGTTGGATGCCAGTCACACCCCTGATCTTTTGGTGGCCCCTGGTGTCTTCCCCCACTTTTCCT} \\ {\tt CACTTTGCT} \\$ 

AATTAGACCATTCTTCCCTAGATCCATGCTGTGGTCAGCAAAGGCACTGAGTGAAAGGGTAAGGTCTCAGTGCTACCCTCCCATACCTTCAGGACAGCGAAGTTTGGTGCTCAGGACCGGTCATGGGTCAGGGAGTATCTGGAGAAA

 ${\tt GGACTCAAACGCCATGGAATCGAATGGAATCGAATGGAATGGAATGGAATGGAATCGAATGGAATGGAATCGAATGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGA$ 

 $\label{thm:control} \textbf{ATCCCTTGCTCTACCCTATGTCTAACAGTGTGTCAACACCGTTGGCTGCTCAGTGACCTAACATAGGCTTATTTCTCTGTGATGCTGCCACCCTCAACATAGGGCCTCTAGGGACTTCATGGCTTAGGAAGAGGAGCAG$ 

 ${\tt TAAGCGGTTAGGCTGAGAATATTTGAAGTGGTACACAAGAGGCATCTGTTTTACCCAGTTTTGTATGCC}\\ {\tt AACAAGGTGCTCTTACCACTCCCTTCCTCTCTGGGGTGCTTCAAATGGATTTGAAAGCCAAAATCCTCAGCATACA}\\ {\tt CAGCATACA}\\ {\tt CAGCATACA$ 

 $\tt CTGGCCTTATCTTCCTGTGGTTCTGCCCTTCAGTCATGAAGACTCTCTAGATGACTTGCTCTAACATAG$   $\tt ACTCTCTCACCTCTGGCATCATTTTCAGGAAGGCTTCTATAGCTCTGGTCTCTTTATCCAAGTGGTAAC$   $\tt ACAGGTAAG$ 

 $\label{thm:case} \textbf{TGGTCAGGGAAGGTTTTAGCAACCCTGTATAATACTACATGTCATGTTGGATCACTGTTACAGAGAAACAGTTGTCATGCTGCATTTTAGTAATTCTACACATCACCAGAGAAATAAACAACTCTTATAGACACAGAAATCCAACG$ 

 $\label{thm:control} \textbf{TTATGCCATTCTCCCCTGTGTTATGGTGGACTGTGCATGCTCCTCCACTCACACCAGCCTGTATGCCCTCAGGGCTGGGAAGGTCAGTCCAGTACTGTCTGGGAGGTCCAGTCCCTAGCACAGCCCTCTGTCAATGCTGAT$ 

 $\label{thm:condition} {\tt GTGGCTTGGGACAGATATGCTGCATTCAGGCAACTATAGAGTGGTGATCACAAGCTCTCATCCTGCTGTCAGCCTGCTGGGGGTTGAAATTGTGGCTTCACTACTTTGTACATATGTGACCTTTGGACACTTTACTTAGCTTGTTT$ 

 $\tt CTTAAGCTTGGTGGCCCGTGCTCACTGGGTGATGAGCTCTCCCCCTAATCCCTCTCCCCACCAGTTCTCTCATGGCTCACTGCCCTGTTGGCTTTGTCAGGTGCAATTGCATCAGGTTAAGGCAGGGGAGGAGGGGTGAGGGCTGGG$ 

 ${\tt GATGTAAGGACAAGACGAGGTAGTGCAGGGCAAGGCATGCTGGAAAGAGCCTTAGGATTCCTGGGGGTTCTAGCCTTGGCTTAACCTGGATTCTGTGTGACCTTGGGCAGGACACTTCCTTGCTCAGGCCTGAGTTTTCTTGTCTGT$ 

 ${\tt TGATTCTCCTCAATAAAGTACGTCCCTGGTAGCTGAGAGATGGGAGAGCAGCTCCACATGTGGGACCTGCCAGGGGGGATTCGGCATTCCTGCGGCCCCCTCTGCTGGCCATGATGCTCTCAGATTCTTTGCTGAAAGGGAACGGA$ 

 ${\tt TGGCAACCCTTAGGCAGGGCTGACATGTTGTCCAACTCACGGGAGGGCACCATTCATATCAAGGTCTATGTGAATGGCATCGCCTGAATTTGTGCAGTGCACAGCTTGGGCAACCACACGCAGTAGCTCTGTCTTCAGCCTCTAGTG$ 

ATGTCACCTTGCCTTCAAAAGGCCAAACCTGGCTCGCTTCATTGGCTCCCTTCTCAATGTCTGATACAG GACCCAAAAAGGTCTATGCATCCTGTGGCAAGAAGGTGGCATCCTCACAATCTGGGACCTGACTCTGGT GAAAAGTGT

 ${\tt CTTAATAGTTTGCATCTTAGGCAGGCTGCTTAACCTCTGTGCTTCCTCTGTAGTCTCCTCTGTGATGA}\\ {\tt ATGGGTATGATCATCCCTGCCCTGCAGGGCTACGGTGAGAATGACCAGATGTTGTGCCTAAAGTGCTTG}\\ {\tt AGATATAGT}\\$ 

 ${\tt TAGATAGTATCTACCTGCTAGAGTTTTTGTGAGCCTGGAATAAGACAGCAAATGTGAAGCCTGACGCAGAGTAAACACTCAAGAATCATCATCATTGCTTCATAGCTAACCTTTTTCAGTGTTTAGGACGTGCCAGGTACAAAA}$ 

 $\label{thm:control} \textbf{GGATGGCTGGGTGCAGCCTAGTGTCCACCTGCAGCTGCCTTCTGTGTCAGTCCTCTGCCCCGCCAAGGCTGTGAGGCTTGTCCATGCGGGTAGCAGGATGCTCCAAGGAGCTGCGCACTGGCCACCATGGTCCACTAACCTCACTA$ 

 ${\tt GGGACCCAAGAAATCAACTGTATCAATCAGGATAGGCTGCTGTAACAAATAATCCCCACATTTTCATGGCTCAGCCCATCATACGTTTATTTTTGGCTCACACAAGTGAAATGTCGATGCTTCCAGTTAGGTTGCCCTCCTTGTCTA$ 

 ${\tt CAAACTCACTACCTCAATGGTACAAAGTAGATAACACAAATGAGTGAAATGAGTTGGGAGTAAGCAATA}\\ {\tt CAGAGTGGGAGGGACTGTGGCAAACTGGAGAGTTCATGCACCATCTAACAGGTAGTGGTTACCAGCTCCAGCATGTG}\\ {\tt AGCAATGTG}\\$ 

 $\label{thm:condition} \textbf{TGTGGCAATATGACTCTCTGAGATTGAGAAACAGTGTGTCAGGTTCCATTCATCCTTAACATAACAGAGGGGTGGTAGCTACAGTATACCAGAAAGGGAGCTTTCATTGATCTGCAGCACTCTGTTTCCGTCACAGGGAGAATCT$ 

 $\label{eq:colored} \mbox{ACCCTAGTAACTAAGCAGTCACTCCCATTGCCCATCACTGGGTTCAGGAGGAGCTCCATGTTTGGATCTAAGGGTGGAGCATGTGACCAGGTCTGGCCAATCAGCTGGTAAATCCCCGTGACCAGGAAGTGGTTCAGGATGAGCA$ 

 $\label{eq:GGAAAAAATAAGAAGTAAAAGGAATGAGAGAGAGAGACCAAATGAGAGACTGAGTTATATCAATGGGGGAGAACTCTTTGTGTTGAGGGGATCACCATACAACTCAGTTCCTGAAGCTGCCTCTCAGTCCTTTTGAATGGATC$ 

 $\label{thm:condition} \textbf{GCTTCACCAGCTGTGATACCCTAGGAGGCTCAGGAGGCATGGGATAAGAGCTTGTGTCTCTCAGGCATCATCAGCACCCTCAATGTGACCCATTCTCTCTACAGCAAGAAAAAGGTTGTTCCC$ 

 ${\tt GAGTTATTATAGCTCTTGGCAGTTGCTGCCTGCTATGCCTTAGTTGTAACAGAGGGAAGTCACCTCTGTGACTAAGACCGGGCTTATAGCACCACAGGGAACTCACCCAGACCTGTGGGCTTTGGGTAGAGGTTGGCTGTTCAGAG$ 

 ${\tt TGAGGATACTGAAAAGAGCACAAAGGGTTAGCTAGTCACAATGTCTGGGGTTTCTGCTAGGAAAACTAGAATACTGGAAGTGACTTGATGGTTGACAGCTGGAATTATCTGGAATGTCTCCTTTCGTGTAGCTGACAGTTAATGCTG$ 

 $\label{totalaction} \textbf{TGCATTCTGGTGCAAGCTCCTCTCTTTTCTCAAACCAGTAGCAAACAGTCTCTGCACTGGTAAACAGACCAAACCTTTGAGTAGCATTGCTAAAGTGTAACAGAAATGAGCTACGGATGTAGAGCAAACAATGTCTAAGATAC$ 

 ${\tt CATTTGGTACATATGCATTGAATATTGGCCTTAGGAGGAGGAGTCAGGGTGAACCTGTGTACACATTACAGCCTCTCCCAGGGTTGTGGGTTGTCCATGTGAACTTGGGCATTATTACATCATGGCAGGTGGATAACAGGCTAACA$ 

 $AGATATCATTGATAAGGAGATATTTGAGCCAAGAAATGAAGGAAATGAAAACAAGCCAACAGGTTTCCC\\TTGCAGAGCAGTCCAGATATAACAAGTAGCAAATGAAAACTTTCAAAGTGGGCATAAGTATGGCGTGATGGAGAAACA$ 

 ${\tt CACTCTGCCCATCTCCACTGATTCCCATCCCCATGACCAGCCCCACGTGCTTTCCACCAGTGTCTGAGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCAGGCCAGGCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCCAGGCCAGGCCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCCAGGCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCAGGCCAGGCCCAGGCCAGGCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCAGGCCCAGGCCAGGCCAGGCCAGGCCAGG$ 

GAAGAGGGCATTGAGGGTGGCAAAAGAACCATGTGACAGAAATGTAATACCAATCCATTTATTCTGTA CTCTTCCTGATAATGCAAAAGAGTTAGACCTGGTAGTACAATGGAAGTCATTTCTGATCATCTTGACAC CTGTGTTTC

 $\label{eq:condition} \textbf{AGTTCTAGACTCTACTATCAATCTGAGTGGATTGTTCCAGATGCTTGCATGGCTGAGAT ATGCAAAAAACTGTCTCCCCATGCTGATTGGTAGCATCTTTACATGGGCAAGTCTTCCTACTTGTAAAG \\ \textbf{AATGAGTTA} \\ \end{aligned}$ 

 $\label{thm:control} \textbf{GCTTGATGATATTTTAAGGTCATGTCTCTTGGAATACACATTCAATATTCATTGCCAAATGTCTGAACT\\ \textbf{CACCTCTCTTGAAGCCATATTCAATTATCAAATGAAAATAATTTACCAAGCAACCTCACAAAACACAAA\\ \textbf{CTCTAGGTA}$ 

 ${\tt TAAGTCAGTTCTGAATAGCTTGGGGATAGTGGCTACTTAATTGGACAGCATGGCTCTGGAAGGTCAAGTCAGCCTTCACCTTGACAGTCTCATCTGATAAGTGGGCATATCTCAAAGTTGTCAGGTGTCTGAAGGCTCCAAATGTGA$ 

 ${\tt CCCAGGGACACCCCACCCCACCCCATTCACACAAGGACTCAAGGACAGAGCCTCTACCCACAGATGAACTTGGGTGGTGCACAGGCACACGAGCTTGATGGCAGGGCACGCCCAGGCTGAAGGGGCCGGGTGGGAGCTAAAA}$ 

 ${\tt TAAATCCACCTGATCAAGCTGGACTCCTTCACCAGGCCCTTCCAGGAACGGACAACTCTGCTCTGAGGAGATCCCTTCTCATGGAGGATGACTCAGCATGTCCTTTCATGCAGCTTCCATCTAACCTCTACCTCAGCAGGTGTCTGC$ 

GAGGAAGCTGATGTGGTGTCCTGAGCTGCATTTCAGGTTTGCAGGTGAGGTTAGGCTTGGAGCTTCTCC ACAGCAGATTATACACATGCGACCAGCCTAGCCCATAGCTATGCTCCCAACAAGACCTCAGAGACCTCAGCCACCAAG

 $\label{eq:total} ATGGAGACCACCAACGCAAGCATCGGTCTTTGTTTAGTCAACTTGCATCCTGAGAATGGATCACCAACTCAGCCCATATGTGTGGCTTCCCACTCCTTAGAGATCAGAGCAAGGAGAAATGTTAGCACTGGCTAGATTCGTAA$ 

ATGCCAACACAGACCCATCTGTCTTCTGGTCTTTTGCTGGTGCCCTCTGTCTACCAAACCTGTGGTACT GCAAGCTCTAAAATAGGCCTCCCTGGGCCAAGAGCAGGGTAAAGAATTACAGAGAATCAGTGGTGGGGC AGAACAGG

 ${\tt TCAGTTTCTCCAGCTGTAAAATGGGGACAATAAGAGCATCCACTTCATAGCGTTGTGAGAACTACTTGAGTTGTTCAAGTTAAGCAGCTGTAGCAGTGCCTGGCACATGGTACTATATCAGAGGTAGCCGTTATTATCCCTGTGAT$ 

TTAGGGTCTTAATACATTCATTTCTGCATGGGTGGGGTTTCAGTCTGCAACAAGATCTTGTAGGGATGC TATCGCTGGCTATTAGGTGATCACAGTTCTGTGCATTGTCTCACCCAGTCCTCACAGTAACTCCAAAGA CAGGTTGTA

 ${\tt TAGATGCTATAAACACCAACACTCAGGGCCATGCCAGCAGTGCAGGAGTGAAGAGGCAGATACGGTTCCTGCCTCAGGAATCTTAGACTCCAGCAAGAGGAGGCAGGAATCCAGGTGCTTGGCCTGGTTGGGAAGGTTGGGGGGTCT}$ 

 $A AACCTTTCACAGGAGAAAGAAGTAGTAAACAATCATACCTGAATTTTTTGGGTGGATCGATATAATAGA\\ AGCCACAACGCAAAGGATCAGGTTAATACTGATGAAGAACTTGTTTTCTGTGCAGCCATCTGGTTTGGT\\ GTAATATGT\\$ 

 ${\tt AACAGTTCCTTTCAGCAACAAATGCCTCATGTTTCTGAGATGGGATTCACACCTGGGGACCCATGTGCCCCTTCCACAGTCCGCATGTCACAATCCCTTCTTGTGTGTTAGGCATTCATCCACACTCAGCTTCTTTTATGCATCTCTG$ 

 $\label{thm:condition} \textbf{GGGTGCTCTGGAGTTGGAATGTGCCCTTTCAAGTTGTACAGAGTTGGGCCTAAGTGGCCAGGTCTTCAT} \\ \textbf{ATTCCTGCATCAGTGAATCATTGGATCTGGCTCTGTGCAGGCCAGGCTGTCCCTGAAGGGGCTGACTCCCCAGCACTGG} \\ \textbf{CAGCACTGG} \\ \\ \textbf{CAGCACTGG} \\ \textbf{CAGCACTGGG } \\ \textbf{CAGCACTGG } \\ \textbf{CAGCACTG } \\ \textbf{CAGCACTG } \\ \textbf{CAGCACTG } \\ \textbf{CAGCACTG }$ 

 ${\tt AAAACAACACACATGGGTTATTCTGCAGCCTCTGTGGGCCAGGAATCTGGGCACAGCGTGGCTGAGCTCTCTGCTTCAGGCCCTCCCCAGGCTGAAATCAAGGTATTGACTGGGGCTGTGGTCTTATCTGAAATCAAGGTGTGGGGAT$ 

 $\label{eq:condition} \begin{tabular}{ll} A CACGCATGCTGTCATACAACATTAGCCTTTCTTTCTGGACCCCTACACCAAGCGTGACATCTGCCAGCGCCTACTGAAGGAGTTCTGAAGGTATGTGCTGCAGAGGCCTGTGCCTGGTATTCAGCAAGAGTGCAACACATGCGTG\\ \begin{tabular}{ll} A CATGCGTG\\ \end{tabular}$ 

 ${\tt GGAGCAAGTAGGCTCAGAACAGAGGGGAGAGTAGTACTGGGGAAACTCCCTACGGAGGACAGGTTAGCC} \\ {\tt ACAGTGGATATGTATGTGATGCTTTTGTCCTCGTGGGCTGGAATGGAAGCTGATAAAGAAGTTCAGACGCTACGTGTT} \\ {\tt CTACGTGTT} \\ {\tt CTACGTGT$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGCAGTCTCAGGGGCTTTGCTGATTCAAAGCTATGTCATCACTCGCAGGGAATCTCTGGGGGAGGCCATGCCATGCCCTACTGTGGGCATATTTTGGGCAAAGTCAATAAACTAGGCCCAGATCAAGTCCAGCT\\ \end{minipage}$ 

 ${\tt GAGGTGGTAAGTCAAGTCATGAGCTTTGTTCTCTTCCACTATAGAAGGTACCCCAGACTCTAGCCTACTAGCCTACTAGCCAGTAGTGTTTGCCTGGACTTTAGTGAAAGCTTTATCATTTCTCTCTGACTTTTGGCATAAATGACTTAAC}$ 

 ${\tt ATAAGAGTAGGGTCATTGTCTTCTCATTCATGGTTCTTCCCCCCTTCCCCACCAGGGGACATTTTACA}$   ${\tt AATGTCTGGAGACATTTTGTTGTCACAACTAGGGAGGAGGATGCTATAGACAACTAGTGGGTAGAGCCC}$   ${\tt AGGAATGCT}$ 

 ${\tt GAAGACACTGATTACAGAATTAAAAGATGCCCACTGTATTTCCATCGTGAAACAATGCACACAGATTCC}\\ {\tt TAAGTACTATTTACATTGTTGAAAATAGACTGTGTGACTCCCAGGCATGTTGTGGTCTGTTATATGTAGGAGGT}\\$ 

 ${\tt TCAGAGTAGACGTTAAGACTGATAAGAGGCATGAGGGAGACTCAGAGGACATTCTTCTGCTCAAAGATAAGAAAACTGTTTTACCTGGCATTTACTTGTACTCTAAGCATATACCTGATTCTCTGAGTCCCACCTTAGGCCAAATCC$ 

 $\tt CTCAGGATTTTGACTTGTCTTGTCTTCCGAAGGAGATGCATCCTCTATGTATTACGCAGCAACTTGCT\\TTGCTCACTTAAAGATATAGCATGGACACTCTTAACAATTCGGCAGCTACATAGCTACACGGACAACTC\\GGTGTTTTT$ 

 $\label{thm:condition} \textbf{GGCTGGAGCTGTGGAGTCCTCTATACAGGCCACTATCCGCCACTGTCCCCACCACTCCTGGAGGCTTTGGACTGAGTCTCTTTTGCTCATTTATAGAGCTTCCAGCATGGTAGCTGGGATCATGGGCTTTGCAGCCAGGTATGTTCAGC$ 

 $\label{thm:control} \textbf{GAGTACATTTCACTTGGTTCAATATCCTGACCTTCCCCTAGAGATAGGCAATGATCTGTCTTGACTGAA\\ \textbf{CCAATCAGCTCAGGTATGTACATGTGACTAGGTTGAATCAGTCGACTCAGGGACACACATGACCAATTC}\\ \textbf{AAACCAAGC}$ 

 $\label{eq:condition} \textbf{ACTCTATACAAGACACATTTACTTTGAGCTGCATCCCTGAGATAATCGACTCCAAGCCAATATTTCTGTGTGCACCAGGACACACTGACCCCAAGGAAAATAAGAAGAAAGCATTGTTCCTGACCCCAAGGAATTTAAGTT$ 

 $\label{totalattalag} TTCATGCTAAATTAAAGCAGCCAGACACAAAAGGCAACACGTGGTGTGATTCCATTGATAGACAATTTC CAGAAAGGGCAAACCTATGGAATCAGAAAGCGGATCACTGGTTGCCTGGGACTGGGGCAAGGGCAGGGA TGAATTGCA$ 

 ${\tt TCAGAACCACCAAGCCTTGAAATCAGTGTGTTCCAGCATGGGCTCAGCTATAAAAACCAATTTGAGTGCTCACAGCTTTAAAATGACTTGGCAGCCTGTCTATAAAATGTCCTGTAGCCTGAAAGCGGGTGAGAACATGCCTGCAT$ 

 ${\tt GATGCTAAAGTTCTTAGCCTCTATGACCAGAGGTTGGGATTTTGTAGGGCACAATCTGCTTTGACAATT}\\ {\tt GTACAGAGCTGTAGATATGTCTGAACCTGCCCCATGTGTTCCAGGTAGCAGAGGTGAGCTACAGATATA}\\ {\tt ACCTGCAGC}\\$ 

 $\tt CGTTTAAGGATCACCTCTCCAGGATTTCTCCCTCCTCTCATCTGAAGTTCCCTCTTTCTGCAACAGTCAGGTGGACCTCAGCCCTTCTAGCCCGGAGCTTCCTCAGCTCAAGAGTTTTTCTCAATCATCAGTTTCTCCCCTCTTCACC$ 

 $\tt CTCTGTAACCGCCTTCTCCCCACGAGGCAGCCTGATTGCGTGGCCCCTTGAAAGCAATTAAGCCTGTGGTTTTCAAACTGTGGTCTCCAGACCATCAGCATCACCTGGAAACTCGTTAGAAAGGCACATTCTTGGGCCCACACCCCATA$ 

 $\label{eq:total} \textbf{ATAGAAGACTCCGTAGAGTGTAGCAATCTGCTGGGAACTAGAAGCATATCAAAGGCTCTTGACATGTGACTCCACCACCAGTGCTTATGTGTGCTTATCTCATGGCCTCCTGACTGGGTTCGAGTTTCATAGATTGTTCAGGTCTTTTCAGGTTTCCAGGTTTCAGAGTTTCAGAGTTTCCAGGTTCCAGGTTCAGGTTCAGGTTCAGGTTCCAGGTTCAGGTTCAGGTTCAGGTTCAGGTTCAGGTTCCAGGTTCAG$ 

 ${\tt GTTGAACATAGGTCCTGTTTGTATTTCAAAAGTGATGATGGACTTGGGCATGTTTGCTCTCTCCGTCTACTCCCAGCCCCTAGTGATGGTGAGTAGGATGCTTAGGATGATAGAGGTGGCAGCTGGAGATAAAAACACACTTCCCA$ 

 $\label{eq:condition} \textbf{ACCAAAATCAAGAGTCCAGAATCCATAGTCTTGCACCATACTCCTGTGTAGGATATGGGATGCTCACTAAGTGGACAAGTTCCCTCATTGGGTCAAATGCAGTGACAGCACATGGGACATTAGGGAAAATCACTATCAACTTTGGGC$ 

 $\label{thm:condition} \textbf{ATAGTGATGGATACTGGGAAGAGGCTGGGAAGATGCCCTAACATTAAGGGGTGCTACTCTGTGGCATTGACGTGAGCCAGAAGTAGCCAGGCCATTACAGACTCTGCAGCTCAGCTTCTAATGATCTCAGTCACTAAAAAA$ 

 $\label{thm:constraint} {\tt GTGACATCTATTTTGGTTTCTCAGAGATCTTTTTGCATAACACCCTCAGTGCTAGCCTGTGTCCTGGGTGGTCCAAGCTACAGAATCATTGATCTCTAGATGACTGAGTTGTTATTCTACCATGAGCTATAGTTGTTGTGAATTCTAT$ 

 $\tt CCCTCCCATGTCACCCCTCTCATCATCCCAAACACCTGATGAGGAACAGCCTGGAGCCTACAAAGGCTCTTCAGACCCACACCATCCTGCTGGTGTCTTCAAGATCCACATACAAAGCAACAGTGCTAAACTGGGAGCGTCTTTT$ 

 $\tt CTCTCTTATTCTTCCTCATGGACACAGTTTCCGCAGATAAGTCTTTGAGTTTCTTAAACATACCTAAGACAAAAAGCTTCATCTGCGCAAGGCATCCTGAACAGTGCCTGACACGTGTCCACATTCAAAGAATAGTTGTTCTTAG$ 

 ${\tt GATTAACTCGAGGCAGCGTTGTTATGGCCCGGTCCCAGATATTTCGAGCATGGTTGACTTGGCGATTCT} \\ {\tt TCATTTCCATTTCTGCGTATTTCAGCCAGAGTGTAATATTTCGGTAGTCTACATCTAAAGCACGCTCGT} \\ {\tt ATATGGATC} \\ {\tt TCATTGGATC} \\ {\tt TCA$ 

 $\tt CCTATAGTTTGTGATCTGTTGATTACTGTGTTACTCTGGATGAAGAACTTACCCCTTTCTACCTCCATT\\ CCCACCTCTATCCATTGCTGGCAATGTGGTACCAGACTCACAGGCCCATCCTGGTGGGGGTGTGCATGT\\ GGGAGAGGG\\$ 

 $\label{thm:condition} TTAGAAATCATTCGCTCCAATATTCTACCCAGAGCGGGAATCTCCATGAAACATCCCAGGCACTTCTGA\\ CACTGAGAACCTCACTGCCTCATGTGGGAACACATTCTGTTTACGGACACTTCCCATTGGTAGCAAATA\\ TGTGCTGTA$ 

 $\label{thm:condition} TTACAGTGAATCAGTGACAGATCTAGTCTTCCACATTCTTAACCATGATGCCACATTTCTCCCTCTCAGCCAGGGCCAGAGTGTGATAGATTAAACATGGCTGCAAATTTTGTGTCCCTTCTTTCATTAAGATGTAGAGTAGATCGGG$ 

 ${\tt CAAAAACTACAGACTCAGATACATTTAGATTCGAATCCTGATGCTGCCCAGTTTGTAGTAAGTCCC}\\ {\tt TTTCATTCTGTAGGCCTCAGTTTCCCGATATATGGAATAGGGACATTAATATGAACTTTGAGGGGTTGTTGTGAAGAT}\\ {\tt TGTGAAGAT}\\$ 

 $\label{eq:condition} \textbf{AAGGGGAGAAGACTGAGTCATTTTGTCATGTCAAGAGGCCTCAGAAAGCCAAGGTGTCCTCACAGGGAAAGACCAGGGCATAAATACCCTGACCTCATTCTCCTCCCCCATAGGTCTCCTGGGTCTTTCCTTTTAGTAGTCCCAGG$ 

 $\tt CCACCTACACCTGTAGGAGAACTTGCTCTTGAACTTGGAGCCTGCTTTTTTCATAAACATAGCATGCCAATAGTATAGTTCCATACCCTGTGGAACAGCCCTCAATCACAAGCCCAAGAAAGTTCATTCTTGGTGGGATTACTC$ 

 ${\tt GGAAGCTCTGCATCCACTTGACAAGCCTTTTAGGTCCCAACAGCAGTGGACTCCTTATCAGGGCTACTCCAAAAAGGCTAACCTTCCAAAGGAAACTTGTCAGGGCTCAGCTGTTGGCAAGATGGATTAACAAGTGCTTCCAGCTAA}$ 

GAGAGTATTTACCAATAGCATCTGACCAAGACTGTAATTTCATGGCTGCAACTAATGACAAAGTCAAGT GTCGAAGGCTTAGTTCTCGAGGAGACAGACCCTGAGATACAGATTTGAATACAAGTTTATCGGGGAGTG CTCTTGGGT

 $\label{thm:condition} \begin{tabular}{ll} GCCTCTGAACCAAGTCACGCAACGAACCATGATTTAGGCATTTATCACTCAGACCACGCAAGGAGACTGAGACCAGGCAAGGAGCTGAGGACCATGATTTGAGGCATGGGTGATGGGTCACTGTATTGTTGGTGCCCAAGCAGGGT\\ \end{tabular}$ 

 ${\tt CCGTGTCTGACGTATGAGGAAGACTTTGCAGTGCATATATGTCACAGGCACAGCCACTATCCTCAGCTGCACGTTCGCAAAGCCAGGACAGTTCGAGTCATCCTGAGGACAGTCATCCTCAAGACCTAAGCTTCACTGGGACAGTCATCCCAAGA$ 

 $\tt CTGTGAACTGGCTCTTTCTCCTGGTGCTTCTCAGTGCAGAGCACTGAAGAGTTCAAGAACTCTACCTTCCATTCTGATCTCCCAGACCACTAGGAGGATACACTAGTGTAGAGGCAGATAGGAGGAGAACACCTTTTGTGTCACA$ 

 $\tt CTGAGAGCAGATGCTGCCAGAGTTCCCATGATTCTGCACAGAGGAAGGTTCTCATAGTAAGGATCTGATGCTGTGTCTGCAGGGCTTGGCCATGGGGAGTATGCTCTGTCCATATGCAGAAGTCACTCCTGGAGCAGCTCTCAA$ 

AGCCTTTGTCACACACCCCAGAAAAGCTCAGGGCCAGATGGGACAGGACAAGTGGTGTCAGATCATCG ACCCGAGGCTGGCCGGGACTAGGAGAGGGCCCTGACCACAGCACCGCATATGGCTGTGGGAGGAGGAAG GGAGGCCCA

 $\label{thm:condition} \textbf{TGTGTACTTACACAAATCTAGATGGTATAGCCGCCTGCATACCTAGGCTATATGAGACAGCCTATTGCTCCTAAGCTACAAATCCATACAGCATGTGACTGCACCCAATACTGTAGGCAGTTATAACACAGTGGGAAGTATTTGTGT$ 

 $\tt CCCTCCAAGTGGATGAAGGTTCCGAGGATGGAAGTTCCAAGACAACACCCTGGTGGTGAAAGTTCCGTGGGGGCATGCTTTGGTCTGCAAACCGACTGTCACCTCTCTAGGAGAGATGTGTCTTGGAGCATGTAGTTGGAGAACCTT$ 

 ${\tt GTAGTGACAATGTTAAACACTTCAACAGAGGTGAACATAGGGTGTAGTGGTCTATTTGTCATCAAACGT}\\ {\tt GGTCCTAGAGAAAAGGACAAGATCACAGGAGGAAAACCCTGACACTCTGTATGCTGGTGAGACACTGTTTTGTT}\\ {\tt TGTTTTGTT}\\$ 

 $\label{totaga} TTCTCTAGGAGGAAGTGCTATATTTTATACAAGTTAACTTCCTCTTGATTGCTGGAGAGACTGATGCACCCTTTGGTCTTCCTCCTGCTAGAACACCCGCACATAGCGATGCCAGTGGGAGAAGCAGCTCAACAGCAAATGAGAA$ 

 ${\tt TATACCATAGCAGAAAGTGATTAAAGGCTTAATTCATTTTGGCTTGTTGATTTGGCTACCCCGTTACTCACACCTGTCCCAGGGTTACCCCACTCATCAGCCTGTGCTTTGCCATCTTAGCTTTAATTCCCTCTTTGTTTCTAGGATCCT$ 

 $\tt CGCCTTGAGGAACAACTTGAGCCCTGGAGGGCAGTGCCAGGGGAGGAAGTATTATAGTAACTGGTGGTT\\ ACAGAGCAGAGATTGAGGCCAGTCCTCCTGGGTCAAGCGCATGCACCGCTGCATCCAGCTGCATGATCGGGCTAAGT\\$ 

A GACCAAGAT GGGAAGGT GGGAGGT GTTGAGGGAAGGAGGT TATGCAGCTAGCACGGCAAGAT GGCAGGT GGTGATTGAGGGCACTGCCCT GAACCAGGGGGT GTTTCAAACCCCGCT CCCTCCATCTCCCATGCCT TAGTT TO THE CONTROL OF THE CONTROL

 ${\tt GAACCTAGTAGAGCATCTCACTGTGCTGCCAGGGCCAGGCTGGTGCCTTCTTACGGAAGACAGTACAAGGGATCAGGTGTGGCCAACAGGAACTTGGGAGCATTGGATGCCTGGCGTGGAGCTGCGCTATGCTTACCTGGTTCCTAT$ 

 ${\tt ATTGTCAAGTCCATTTTTAGGTGGGGAAGCTGAGTCCCAAGGAGGTGGTGTAAGTTGATTAAGTTCAAGTTGATCAAGTTGATCAAGTTGATCAAGTTGATCAAGTTGATCAAGTTGATCAAAACCCATTCTCTGAACCACCTTGTTATCCT$ 

 $\label{eq:gammagacatcat} \textbf{GGTCATCAACAAATAAGACATCATGAAGGGAATGAATTCAAATTTGGTGCCTTTGCATCCACTTTT} \\ \textbf{TGTGTAGAGTTGACTGGTCAAAAGTCTGTCTCTCATTTACAAGTCAAGGTGCCAGGCATACAGTCTTGA} \\ \textbf{ATGTTGAGC} \\$ 

 ${\tt CCTAGTGCCCACATCATGATTTCTAAATACTATTCTCCAATTAAAGAAACTGGGGCTTTGAGAAATGGCTGACTCCAGGGCTGGGGTAGGAAATATACAAGATGAACCTGGAACATCTTGTGATGCCAGGAAGTAAGAATGTGCTTA$ 

CATTTGTGTTTTGCATTCAGATGTTGACTGAATCTTGGTCAATATTGTCCCAGATTGTTTGGTACCAGGC CTAAATGCCACAGTATTACTCAGAGCAATTAACCTTTAGTCGTCAACCCAACATATTCACCATACCCCT GTTGAACAA

 $\label{eq:total} \textbf{ATATCACAATTGGGGAAACTGAGGCTAGGAGAGGAGAACCTGTCCAAGGTCATACATCTGTGAACTACTAAGAGAGCCAATTGTCTGCCTTCAAATCCTGACTCTGCCACCTACCAGCTGCATGACTGTGGACACCTCTCTG$ 

 $\label{eq:condition} \textbf{AGAGTCTGAACTGAGGCCCAGTCCCTTCAACAAGGGCACTGGAGTGCTACTCCTCCTGCCGCGCTTCACAGAACAGGGCCCCCCACTGCCCAACCACAGGGGTTAGCCTCGGCCACTCCATCAGCCTCCTTCATACCTCAT$ 

 $\label{eq:condition} \textbf{AGCTCTTGCCAGACACAGCTCTTCTCCATTGCCTCCCATTCTGCCTAGGAAGGTAGATGTTGTTTTCGGGCTTCTGGCTGATTGTTTGCCTGGGTAACTAGAGTGTAAGCAGGAAGAAGTGAGCTAAAACCATGGTCTAC$ 

 ${\tt CAAAGAGCAAACAGAAGATTGGGTTACTTCTGTGATCACACTGATAATTCCAGCAGGCAAATCTTAGTCACACAAGTCCCTGGAGTCCAGCCAATCTGGCTGCTTTGATGCTAGGCTCAGTAGAACTGAACCAAATGTGCGTGGGA$ 

TCAGTCCAACATCACTGTTGCTCTCCCTCCTCCCGCCCCTGCTTCCTACTTGCCTAACTTTCCGAAG CCAGAGGGCATGAGCCCCGGGGGGTGGAGCCAGCAAGTGAGTTTCCTGGGGTGCAGAACAACATGGAGA AGGGGGAGG

 $\tt CCACACACTACTTAGCAAAGCTCTTGGCAGACAGTAAGTTAAGGGCTTTACACAGACTTTCATGTGCTACAGCCTCTGTAGCGAGCCATTTTACAGATGGGGCACTGAAGTGTACAGAATGCGAGTCCTTAAACCAAGGTTGCATAG$ 

 $\label{thm:control} \begin{tabular}{l} GCCATATGCTGTGGGTCAGGAAGAAGCCATCTCCTGGCCTAATGACCT\\ TGGGAACGTTTAGTCATTTCAAGGCATTTATCGTTGAAGCAGCGTAGGGGTCGTTTGGGCTATGTTTTC\\ CTCCATGTG\\ \end{tabular}$ 

 $\label{eq:condition} \textbf{ACAGCAAACATTGTTTTAACAGGTTAACACCCCTGGTAAACTGTGGACATGCTACTTAACACACCCTTTTGTTGACAGTGAACATGTTAGTCCACAGTGAACACCCTAGTTAACAGGTAACACCCTTCATTAACAGTTAGCACCCTA$ 

 $\label{eq:control} \textbf{ACACAGTCTTCCACTGTGGCATCTCGAGGGTACCTACATCCTCACCATCCAGTCTGTGAGGTGTGCTGACCAGACTGAAGGGTCTCAGGACAGGGCCAGGGCTTCTTCTATGCTGTCGCAGGTGGACTTCACATTATGGTGTT$ 

 $\label{thm:condition} {\tt GTGCATTCTAAGGTTTGCTGTCATAACTGCAAGTGGTGGCAGCCTTGCCTGTCACATAGGGTAGGTGTGAAGCTCAAGCTGGCAGAGCCCTGTGCTCCCCTACGCCAGCTCTCACATTCCCTGTGTTTGCCAGGGGCTGGG$ 

 $\label{eq:cagg} \mbox{GCAGGGTCAGGGTGAGGTAATCAAGGTGCTTGGGATGCACGTTTAAGGAGGCAGGTCTCAGCCCCAACTCTGTGCTTGCATATTCTGCACCCCAGGAGCCTCCTTCACCTCTCTAGTCCTAGTGCTGT$ 

 $\label{eq:ccctctg} \textbf{GCCCTCTGGTTGAAAAAAAAAAAAAACCCACACATAAACCTGTTATGTTTCAGACTTTATGATCTGAGCATAAAAAGAGCCTGAGCCTTTGATTCATATCCATCACGAGTACAGCGGTACTGAAGGGATTTGCATGTTTTAAA$ 

 $\tt CTTCCTAAATAGCTCTTTTAATTCACTCCTCATTTTCCAATCTATCCTTCATCCCTATTGCCCCAACTCACCCCAAATGCATCATCGCCATCTGGCACCAGTGAAGATTGATAGTGGCTTCAATTGGGAAAAGTGTGGGGTGG$ 

 ${\tt CCAAAGGACAAATGAAACCTGTACTGTAAAGGGACAGTGGCAAGACCTGCTGAGCAAAGGCTTGGGGAAGGCCAGTGAGGGAGCAGGAAACCACAGCCTTGGGGAGGGCAGAAGTAAAGGATGTCCCAGAGGCAGGACTAGAAGGT$ 

 $\label{eq:ggtgtaccat} \textbf{GGGTGTCACCATGGCAAGGGGTGGTAACTTCTGGATGTTGCTCTGGCATTCGTAAACTGTCATAGTGCC} \\ \textbf{AGTGGGAGTGTCCTATGGTGATGGGCAGCGAGAGCAACTTGAGGTGTGCTTAGCACCTCTTCCTGGCTT} \\ \textbf{TGGTCTGTC} \\$ 

 $\label{thm:condition} \textbf{GTTTACAAATGAAGTGTTAGAGGAAAATACAGCAGGAAGAGTTTAATTCATCTCTGAGGTTGCAGGTTCATCTCACCCAGCCACCCATCCAATGCCCAGATTCCCTCTGTGGCATTCCTGCCAAGTGATTAACCTCTGAACCC$ 

AAGTAAGAAAGATACACAGAACCAAGGCTCAAAGTAAATGTCCCAAAATTTGGTGCTGTCGGTCACCGT GGTGGAAGAACACTCATGTTCCTTTGACCTTCGCATTATGGGCATTATCTTTCCTTTTTCCTGGTTTA TTTGTTTAG

 $\label{thm:condition} \textbf{ATATGCAAGTGGTGAAGTAATAAAGCCCAGATAATGTTGTTTCCCTGGAACACTTGTGAGGCCAAAAGT\\ \textbf{GATGCCTCCCTGCCATGCAGTGGCAGCAGAAGTCAACCTGGACATTAGACAAGTTATACTTCCCTTAGT\\ \textbf{GCCAATAGC} \\ \\ \textbf{GCCAATAGC} \\ \\ \textbf{CCCAATAGC} \\ \textbf{CCCAATAGCC} \\ \textbf{CCCCAATAGCC} \\ \textbf{CCCCAATAGCC}$ 

 ${\tt GTACTCTTACCCTGAGAATAATGCTCTACAGTGAGTCAGGGAGTCTTGTGAGGTCTCAAGAACAGGGACCTGTCTTATTCACTTGTGTGTCCTCAGAGCCCAGAAGAGAGACAGGCATATAATAGATATTTAATACTGT$ 

 $\tt GTGTAACCAGCACCCGGAATAACAACTGAGGCATTACCAGCCCCCTAGAAGCTGTATGGGTTCTTTTTGTGTCTGACTTCTTTTGCTCAAAATGATGATTGTGAGGTTCACCCATGTTGTGTGTAGATGTGACCGGTTATTCTCGT$ 

 $\label{eq:totalcat} ATGGGCACCTGCTACCATGCCCAGCTAATTTTTGTATTTTTAGTAGAGACAGGGTTTCACCATGTTAGCCCGGCTGGTCTTGAACTCCTGCCTTCAAGTGATCCACACACCCTCAGCCTCCCAAAGTGTTAGGATCACAGGCGTGAGC$ 

 ${\tt TACAAGGAACTTGAAGACATCCTCTTTCTTCATTGGCAGGACATCAAGGGCTCTGGACATTGTGAAGTTTCCCTTGAAGTTACAATGGGAATCCAGAACAACGTCACATGGACCCCTCCATGGGTAACACAGAAAGCAAATGGTGT$ 

 ${\tt TCAAATCTAAGAAGAAAATTCTACCTAAGGTCTAGCACAGGGGGGTTGCATTGAGGTCCAGGCCACAGAGAGAATGGGAGAAAGCATGTCAGTGACAGCTTAGAATGCCTGGAATCACACTGTGCATTTATAATTTTCATAGGAAGT$ 

 $\label{eq:condition} \mbox{AGCAGGAGAAAAGACTGCCTATCCAGGCAATAGCGTGACTTAGAAACAGGATTTGAGTACCACTTC} \mbox{ATGGCTAAGCATGTGCGGGATGGAACCGGTCTTCCTGGGCTTACATCTTTGCTTTGCCTCTTTTTCCC} \mbox{TGTGATGAG}$ 

 ${\tt CATGAACTTTCATAGATACCAAAGAGTAGGGGGATCAACTGTTTCTATTTGCCCAGGACTGAGGGGCTTCCTGGCATGTGGGTCTTTTAGTGCTAAAACCAAGACAATATCAGGCACATTGGGACAGTTGGTCACCCTATCAGAGA}$ 

ATCAAACATTGACAGAGCACCTCCTCAGGCTCAGGCATTGTTCTAAGTTCCAGGACCACAGCAGTGGGG AAGACAGGCCACATTCCTGATCTCGTGGAGCCAACACTCCAGTGGGGAGAAACGGACAATAGCCAGGGG TTCTCAAGT  ${\tt CAAGGTGATCTATGCTCTGGTTTGATTTTTCTCTGGTCTGAACGATCCACTCTAACCCATGTTCAGAAA}\\ {\tt TTAGTCTGTTTACACGGAGGTGCCTGCCTCCTGATGGCAAGCTCAAAAGACCAAACAGTGAAGCATTAGAAGGCCCTG}\\ {\tt AAGGCCCTG}\\$ 

 $\tt CTCAAAGTAGTGGGTCAAGATGAACCAAGTTATCAGCATGTTACAGTAAACATGAAGGTCTGTGATGT\\GCACCCAGGACCTGGTGTAGGATTTGCACCATGGCTGATTACATGAAAGGAATGTGACCAACTCCATTT\\AAGAACTTT\\$ 

 ${\tt TCCTCATTACTATAGCGTTTAACAGTGAGCCAGTTTCTTAGCTGTTGAGTCCTATACATTTAAAGGAATTGAAACCATGAAGGCTCAGGGAACTTCAGCTTAATCTGAACAAACTGGAATTACTGGATATCACTGGCTACATCTGTC$ 

AAAACCACATTGCATACGTAAATCTAAGTCACAGGAAACACAAATCCCAGAGACAACCTCAGTTATGTG GCCCTCTAGTTGGACTCAGAATGGTTCTGACCAACACTGGGTTCAGTGTGGCCGAATTTACATGGAGGG TGGGTTTGC

 $A GAGTCCAATGTAATCATCATCTCACCAGGTAGCTGGCTGATCAACAAAGGGAATGGTGCCATATTGGG\\ GGCTCATTGTTGGTCTCTGTTGCTGACAGATTGGACACTCAGCAGTGGTCATAGCCAGGTTGGCCTCGG\\ TGAGTTGAA\\$ 

 $\label{thm:cagact} \textbf{TGCAGATGTATGACACCTCACTGAAGGTGCTGGGGGAAAAGGTGCCAACTAAATAACTCTGAAATT\\ \textbf{GAGTATCATGTGCAGACTGCAGGCAAAGGGAACTGCACATAGCACTGTACTCTAGTTGTTAACATTCTT\\ \textbf{TCTCTCAGG} \\$ 

 ${\tt CATTGTTTCATGCATTGTCGATAATCACTAATACTCTAGACCTGCACTGTCCACTATGAGAGTCAACTGCCCACGTGACAAGTGGCGACCATATCAGACAGCGGAGAATAGAGCATTTCCATTGTTGGAAAGCTGTGTTGGACA$ 

 $\label{eq:condition} \textbf{ACATTATCTCATTGTCACACAGCCAGTATGGAGCCAGAGCCAGAGTTCGAAGTCAGGTGTTTGTGACTCCAAATCCCATGATCTTAACTACACTGCCATAATGCAAAGGATACTGTAGACTAAATGCGATTTCAACATCAATGTGA$ 

 $\label{eq:concord} \textbf{AGTGCCACCTCGACAGGCATATGGTATGGCCAGAGTGAATCTAAACTCCAGCAGGACATTTGGGAAATT\\ \textbf{ATGTAATCTGTTCAACATGTATTTGTTGAACACCTACTATGTGCCACATACCATAAGCCCTGTGAAGGT\\ \textbf{AGGACTCAC} \\ \\ \textbf{AGGACTCAC} \\ \\ \textbf{CONCORD CONCORD CON$ 

 $\label{thm:condition} {\tt GTAAGTTGCCCAAGGTTTCACAGCCAGTAGGTGATAAGCCACACAAATCCAACCCAGGCAAGCTGCTTGGA}\\ {\tt GGCTCTGCTCTGACCACTCCACCACACTGCCTCCTCCCAGCTGCAAATGCCTTGGTGGCAATTTCTGG}\\ {\tt GACCATTTC}\\$ 

 $\label{thm:condition} \begin{tabular}{ll} GCTGAGGCTGAGGAACCCGGATCTACAGGAGTCCCCAGAGGGGCTGAGCTATGGCCAGATATC \\ TAGGAGTCCCTGAAGGCTGCCAGAGGTGATTCCCTCTAGACGTGGCAGGAGCCATTCCCTCTGGCCTGA \\ GCCACCTCA \end{tabular}$ 

 ${\tt TGCATACATGGAACATCCCTTCTATCCAGGGTCATTATCCCAGGGTGTTGTTCTCACTAGTCTTTGACC} \\ {\tt ATTAAAGCCCCCAGTCTACCTCCACACTTCTTCCCTGGACAGTCCTTCAATTACTTGCAGGCGAGACAGGGGGTGTTATG} \\ {\tt GAGCTTATG} \\$ 

 ${\tt TAAGAATCATGGCCCTAGTCAGTATTTCCTCCTCATTTTATAGATGGGGAAACTGAGGCTCCAAGAGAGGGCTAAATCTGAGGCCTACAATTGATTCAAATCCTGCACTCCTACCACTAAATCTGGGGCCTCTG$ 

 $\label{thm:condition} TTCAGTGAGCTCCTGAGGTCCTACTAGCAAATTATCAACCTGAAGGTGTTTTTGGGGACCCCTCTTCCC \\ AAACATGCAGTTGGTATTAGAAGTGAGGACCTTCTTGGAGAATGTGCCCACAAACATGGCTATCTGGCT \\ AACTTTTAG$ 

ATAGAATGCTCCTCACCCTTCCCACATTTCTTGCCTGCTAGAAAGACTCTGGCTTGGCCTGTGGCTATC
TCTTCCCTTTTTCTGCCATTCAAAGAGGATCTGTGTCCCTCAGATCTTTGCAGTGGTGAATAAAGAGAA
GAAAAGAGG

 $\label{thm:condition} TTAGGAGCTCCCAGAAGGGCACCTACAGGATATGATGTTCCCATATCGATTCTTATTGCGGTTTTCATC\\ CTCCTTGGCTGTGTCCCACGAAGCTGTCTGCCCCTCTGGTAAGGCCTAAAAAGCAAGGACAGAGTGGTT\\ AGAGTGGCC\\$ 

 $\label{transform} \textbf{TGAAAGTCAAAATTGTCCCTTGCTCTAGGAGCTGAAGAATGGATGTTGTGTTAGCGAGCATGAAAACAA\\ \textbf{CACTAATCTTGTACATCTCCATCAGAGCTCATGAATGACCAGGCACATTGTCAACGTGCAGTAATATTT\\ \textbf{TGAAAGGCA}\\$ 

 ${\tt TGTTGGAGGAAGGTTGAGCGTTTATGGTTTGCTTCAGCTCCTGTGCACCAGGCCTGATGCTAGGTGGGGTGTAGGAGGCACAGCTGCTTTCCAGGAGGGGACAGTGGCTGCCAGCAATAGCAGGTAACATTTAT}$ 

AACAACTCTCTGAGTTAGGTACTTTTATTTTCCCAGTTGTCTTATGAGAAGCCGGAGCACAGAGAGGGTT GAGTGGCATGTCCTGATACATCGTGGTACCGTGCGAAGGGGTAAATGTGATGGGAAAGTGCCTGGCAGG GCGAGCACC

 $AGCACATCTTCTGACCATGCTGAACTTGGAGGAGGTGGGAATGCACGATTTCACCATTTTCCTGAAAGG\\ AGGGGAACTGTAACATTGGTGTATAGCCCCAAATGTCACCATATTGCCACACCTCATATTGTGGGAGGT\\ CAACGAAGA\\$ 

 ${\tt CAATTCCCTCTGCCTGGAAGGCTGCCTGCCAGGTTCAGGTTGCCCCATCATTTGCATTCATAGCACGGCTGGAGATCCTTCATCCTTCCAGTGTACAGGCATGTGAGGGATTCTTTAATTAGTCCTCCAAGGCCAGTGAGGGATCTG}$ 

 $\label{thm:condition} \begin{tabular}{ll} GCAGAGCTATGGGCAGAAGTGCTCGGGGAACCCTCGACCAATGGCTCTCCATAATTGGGGTACAAATCCT\\ GCAACTCCCTACCATGGAGCCATTTGAGGCATGTGTGCCACATTCCCGTCCAGAGCCACCACT\\ GCCCTACCA\\ \end{tabular}$ 

 $\tt CTGTACCTAAAATAGACAAAGCTTTGGAATATTATCCCCCACCTCTACCCCTAAACTTCCATCTTTAGCATAGGACTGTGGGAGTAAAAGCATTCATGCTGGATAGGCATGTTCCAAAATCAACCTGTCTTATAAATTACACATTCA$ 

 $\label{thm:condition} \textbf{GCTCCTACAGAAAGTCATCACCTTCACCAGCCATACACGTTAGCACTGTAAGGAGATAATTTCT} \\ \textbf{TTACCTCACTGCTGGCAGGTCCAGTGCCTGGAAGGTGATTCCCCTGGGACACAAAACTCAGGGTCCATT} \\ \textbf{TGATGAAGA} \\$ 

 $\label{thm:condition} \textbf{TGTGATGGTAGTTTTAATCCAGTAATAGGGTCTCATGGTTAAGTTCTTAAATGAAGCCAGCAAAAGCAGGAATCCAACCTGTTGCCAGCCCCTAGCATTGACAGTGGGACTCCTTTTGTGTTACATTGAAGATGCAGACCATGGATGC$ 

 $\tt CACATAGTGTGTCCTTGTCAATCAGATTATTGCTCGCTTTGCGTAGAGCCTCCACTGGCTTCACGTT\\GTACCCAGGGTTAGATCCATGACCTCCCCAACAATTGCCACTCTCCCATCCACTACAATCTAGCAA\\CACGGACCT$ 

 $\label{eq:condition} \textbf{AGTATTTGTTATCATTGTCAGGAGCTCAGCAACACTGTAGATTCTTCCTAGGGTAGCAATGCACTGGAGATGCCCCACTTTACCTCCTCTGCTGTCTACCTTTGATCACCCCTACTCCAAGGCATCCTCTATTCATGAGACTCCC$ 

 ${\tt GAAGCTGGGAGGTTAATCTGCAGGGCTCCTTCTGATAAAGACCAGGCCAGACCATGCACAGCTCGGCCGATGATAAACTCTGGGCCTGCATAACCACAGGAGCCCATCTGAGGTGTAGAGTGTGCAGTTCTGCCTCCCAGGACTCC$ 

GATTTCATATCCAAAAATGGCCACAGCCCCCTGCTCCTCATGAACCCTGCCACTCTCCATCAAGAGGGA GAGTTTATTTCTCCCCCCTGGAGACTGGCAGGACTTTGTGACTGCCTTGATGAATAGAACGCAGCAGA GGTGACTGT

 $\label{thm:condition} \textbf{GCTGGAAATTCTCTGTTCCATGAGGCTGACTGTGCAATGTACACCATCTAGCAACATCCCTGGCCTCTGTCCCTGGATGTCCCCAGATGTTCCCCAGATGTTCCCCTGGAGGGTGAAATCTTCCCCC}$ 

 $\label{eq:condition} \textbf{GCAGAGAAATTAAAACTGCATGATACATTTCCTGTAGTGAAGCTAAGCCTGAAGCCTCAGGACCTGTGTGCCACAGGGGGCATGGAAGAGAAATGTGTTTTAGCCATGCCATAAATACCTTATCATACATGACTTTTACAGAAATGTGAC$ 

 ${\tt TATCAGCCCACTTATTGCTCCCTCTACCCATTCATCAAGCAATGAGATTTCACTGAGGTTCTGCACTT}\\ {\tt GGTTCTGGGAAAACAGTAGTAAGAACCCTCATATAGTTCACCTTGCTTTGAATGGGACATTTATAAACGCACAAAAAT}\\$ 

 $\tt CTTTAGGATGGTGGGGGAGTCTCAGCTCTGGATGCACTTGAGCATCCCTGGCCACGTCCATGATACTGGAGCCTGGGATTCATGCACAGAGATCATGACGCCATTGGTCTGGGATGGGGTCTGGGCATTTGAGCTCCCCAGGTAAGT$ 

 $\label{thm:condition} {\tt GTCTTTGGTTGCTAGCCAGTCCCCTGTCCTGGGGATCAGCAGGCTATGGCAAAAGTAATGCCCAGGGAAAAGCAGCAGGGTGGAGGGCAGCACTTTTGCTAGCTCATGCTTGGGAGGGCCTGGACCAGCATCCTTGCATG$ 

 $\label{eq:condition} \textbf{AGCCACACTTCAGGGCCTTGTATTGTGTCTTCTTCTGCTGGAAAACTCTCCAGATACCTGAATGGCTCACCACTAACCTCTTTCAAGTATTTGCTCAGATGTCAGATGTCACAATAAAACAAATTGTCCCTAAACTCCC}$ 

GAGGAGATTGCTCCATGTGCTTCCCTTCAGATCCCCTGGTCTGCTCTGCCTATTCCTGTCCACCTGTTC
AGCCTCTGGGCCCGCCTCCTCCTTCAACCTGTCTTGCAAGCATAGAGATTAGGGGTAGGAAAGGAGTAA
AGAGAGAAA

 $\tt CCACTTCCTTCACACCTGAGAAAGCACAGTAGACCTTTCTTACAAGGTTCTAAGCTGTTGGAGGCTGCCTGAGGGACTGCTCTGTTTTGAGGATCTCACACCTTAGGGAAGAAAAGCACTGGATCATGCTTGGCAAAGATGCA$ 

 $\label{thm:control} \textbf{TTCTCCTTATACATAGAGCCCTTCCCTATCAAGGCAAATGGATGAAGGCATTTTTGTTGCCTGCGTCCTCCATCACCCTCTGCACCTTTCCAAGATTGCCTTGTTCCATTAGAAAGGAGGAAAGGGGTACAACGAGAAACGGGAATGT$ 

 $AGAGGGATGCTGCAGACTCTGCATGAGTTGCTCTTTCTACTCCCATCAGCAATGTTCAAGGGCATC\\GAGTTTCTCATGCAGAGCAATCACAGGGTGTTGTCTGACTCTGTAACGGAGCCAATCTGATAGACACCT\\CATCTGCAT$ 

 $\label{eq:condition} \begin{tabular}{ll} AGGCAACTGGGCTCCAGGGTCTAGGGGGCTCATTAAAAAGCAGCAATCCCCAGTACCAACT\\ CTGTGGACCCTGCTGTAGTGGGTCTGGGGTGCGCATCTGAGCCTCTGACTTGAGGTCCTGGGATCCTGT\\ TTTGTGAAA\\ \end{tabular}$ 

 $\label{eq:added} \mbox{AGGATACACTCATCAGGATCCAGGGCTCCTGCGAGCCACTGCCAAATGATTGGGAACCCTATTTGC} \\ \mbox{ATTTGAGCAAATGTTTTGGGGCCCAGATGATAGCAATGGTGTTGGTAATGGTGACAGTAATGATGG} \\ \mbox{TGACAGTGA}$ 

 $\tt CCCAAGCCTACTATGTGGCCCTCAGTTTTCCTGCATCAGGATCTCTGGTGTGTTTTGTTGAAGGTGCAGAATCCCAGAAGGCCAAAGTCCTTCCACCTGCATTTTTAACAAGGCTAATTCTGATGCATATTCAAGCTTGATGCCACTG$ 

 $AGTATAACAATGACTATTGATGTGAATTCAGAGCCTGGTGCTGGAATGCCTGTGCTATTCAGGTAGATT\\ CAGAGGCTGGTGCTAGAAGCCCTGTGCTGTTCAGGTGTGTCACATCTGGTGTATACTTCCTGACCAA\\ GGTTTACTT\\$ 

 ${\tt TACCCTGGCTTCTCCCTTCTCCCAATCTCCCAGTGCATGTCATTGGCTAAACCTAAATAGCTGACAGGAGAGCCTGAAAAACACCACCTGCAGGGGTAAGTTACCTGCAATGCACCACTAGAGTGGGAGAAGGAAAGGAA$ 

AGAGATCTTCTGGGCTGAACACATCCATGTGCTGGGGGGATAGCACACCCCAAGTCCACAGAGGGAGAACTCCTTCACCTCCAGGCCCTTCCAGAACTCACCCTATGTCCTCTCACCTGGCTCATCATTTCTGTCCTTTC

GTAAAAGCCATCTATGACAAACCCACATCCAACAATATACTGAACAGAGAAAAGGTGAAAGCATTCCCA CTGAGAACTGGAGCAAGACAAGGGGGATGCACACTTTCACCAATTCTATTCAGCATAGTACTAGAAGTC CTAGCCAGA

 $\label{thm:condition} \textbf{GGATATACGTGATTGGCAGGGTTGATTGTTGCTGCTGGCAGGCTCCAGAGAAGTCAAATAGCTGCCTGTAGCTGACCCATTGCACATGCATCTTCAAACTCTGGTGGTCATTGTTCTACACCTCTGGCCAGAGTTAGTGGGACC$ 

 $\tt CTGGGATATCCCACCTCATTGCTCAGTGGCAGCCTGTTCTGATGTCCAGTGTCCAAAAAAACAGAAGGTCAAGCCCTACGGTTATGAAACAGAGACACTGGGAGAAATCTAGATTCCATGCAAGGGTGACACTGACCAAATGTAGTC$ 

GAAAGGAATAACTTTCAAACCAGCTTCCTGAGCAATTTCAGATACCCTGGGAATCAGATATAGGCAAAC
AATACCTCCTTAACCTGAATTGGGAAGAGAGAGAGATGCCACTGAAGACACATATGAAGCACAGAG
CAAAACATC

 ${\tt CCTAAGCACCTATGGAGTATCTGCACCTTCCTCCTCGTGAGGTGAGGGTTGAAGGTGAGAGCCAGGAGAGGCCAGGAGAGCCCTCACCCTCACAGAACACACAGAAGCCAACACTGACACAGGGCACATACTGGAAGAGGCGGAAACACACTGGA$ 

 $\label{thm:condition} TTATTTGGCTCACCGTTCTATAATCTGTACAAGAAGCATGACACTGGCATCTGCTCGACTTCTGGTGAAGCCTCAGGCTGCATTCACTCATGGCAAAAGGCAAAAGGGAGCTGCTGTGTGTAGAGATCAAATGGTGAGAGGGAAGC$ 

 $\label{thm:condition} {\tt GTGGGTCTAAGTGGATGTCCTCTCATGCCTCAGCAGTCCCTTTACAAAGCAGCAGACTTCTGGGTACCCAGGTCGGGGCAGACCTCCCAACCTTCAGGGTATGCTTCTAGGTTCCCAGTGCTCCAAGAGAGGGGAGAAATAC$ 

 ${\tt GATTTACAATGACCACTTGGGAAATTTGCCTCTTTGCTGGGGTAGGGACCTGACCATGTAAAGGGGAAACAGATGCACCTCAGCCTGCGGCCTCACACATCTGCTGGATGAGCAACGACTATAATTTGCCAGGAGGAGACAATA}$ 

CAGTAGACAAAGGGCAAACCTCAAAAGTGTCTGTTACTTGAGTCATATCACCTTGGAAGCAGCCCACTGGAGCTCTGATAACTAATGTATTTGTCAAGAGGAAAGTCTACATAACGGCTTCCAGGAAACTCCATCAAGTGCAATGA

 $\label{thm:condition} \textbf{TGCCTGCCATCTGTCCCACCCAGCTCCTACCCACACTGTGTTACCACTGACTTCTGTTCATCCT} \\ \textbf{TCCAAAGAGTTTATGCAAATACAACCTGTTATAAATATATGTTCTCCCTCAACAGTTTTCTACACAAAT GGTAGCATA} \\ \textbf{GGTAGCATA} \\ \\ \textbf{CGTAGCATA} \\ \textbf{CGT$ 

 $\label{thm:condition} \textbf{GCCATTATGCTAGTTCCTACATGCCAGTCACTGTGGGGACCCCATTATTCGTCTCGCATCTTAAAGTGT\\ \textbf{ATTGCTAGCAGGGTCAAAGTCATGTTTTCAAACCTTTGGATACTGTACTGCAATGGCTTGGCACTGGG\\ \textbf{GAACATATC} \\ \\ \end{tabular}$ 

 $\label{thm:control} \textbf{GTCTATCTGCTTGTTCTGCCTGTGACTACCTCTCTGGCCTGGATGGGCTCTCCTACCAATCACACTCTTTCCACCTAGGCAATAGTCAGACCCTGTTGGACCATTCTCTGCACCCAGCAGTGAAATCAGAGCAGAAAG$ 

TCCCACATGTTTTCCCTGTTTCTGTCTTTTTCCCAGGACCCCCAGAGACCACAGCTGCAGACCTCAGGT
AAGGAAGTCTTCCTGTTAGCACCAAGCATCGTCTATGTGCCTGTGACCCTGGAGATATCCTAAATGTCC
CAAACGGG

TTTACCCTGGATTGGGCAAGCCCTTTAACTCTCTGAGGCTCCGTGTTCTCAGAGTGACTCGAGGATTCA CTGAGGTGCCGTGTGAGAAGTGGGTGGCCCAGACCTGGACACAAAGAAGCCTTGATCAATGTTTGCAGT TTGATTAAG

 ${\tt TCCTGTTGATCTATGACCTTGCCCCCAGCCCTGTGCTCTCTGGAACATGTGCTGTTCCACTCAGGGTTGGGTGGATTGAGGGCGGGTGCAGGATGTTGTTGGGCAGATGCTTGAGGGCAGCATGCTCGTTGACAGTCATCACCC}$ 

 $\label{eq:condition} \textbf{ACTTACGTGGGAAGAGGGTGTGGTCCTGCATTGGGCAGAATTGGAATGTGACAGAGGTGGTGGCGATGAAGCACACTGACTAGAGAAAGTGCAGGGTGGAGAGAGCCTTTGTAGCTGGGCAATTCACCCACTGTTTCCCCTCACCAGT$ 

TCACTGAAGGCAGCACCATCACAGCTCAGGAGCAGACATGGAAAGGAGGTCATCTCATCCCCCATTCCACCCCCTCCTCAGTGCACTGTTGAAGACTCAGTAGCTCTTCCCCATCAGGGCTCGGAAGCATGGGCTGAAAGAGATCAA

 ${\tt TTGTAGAAACAGCTTGTGGATATTTGGAGCTCCTTGAGGCCTTCGTTTGAAAAGGGATATCTTAAAATA}\\ {\tt AAAACGAGACCATTCTCAGAAACTTCTTTGTGTTGTGTGCCTTCAAGTAACACAGTTGAACCTT}\\ {\tt TCTTTTGAT}\\$ 

 $\label{eq:condition} \begin{tabular}{ll} A CACCTGCTGTTGATCTCCTTAGTGACACAGAGATGAAAAGACCCCATCCTTGCCCTCAAGCTGGCC\\ A TAGTGCAGTGGAGAGAGACCCTGGTGAGCGGGGTTCCCCAGCAGCCTCGAGTCCTTGAGGGCAAAGTC\\ TCTTTGTCA\\ \end{tabular}$ 

 $\tt CCCATTGCGCTCTAACCTTCACCTTCCCCCTGTCCCTGAGACTGCTCTTTCAGGAGCAAGCCTAACACACGTAGAAAGCACCTGGGCTTTGGCATAACATCCACGTAGGGTGAAGGACAGATTCCCCTGTTTTCTAAGAAAGCTAAAT$ 

 $\tt CTTGGTGCTATCAGCAGTAGTTAGGCTGGACAGATGGGACCAGTTTTCCTTTACCCAGCATAGCTCTGAGATGTCCCTCTGAGAATGTCAGCAGTGACCCATCTCCCTCTGGCCATGATCTCACCTCTGGGGAGCCTGGAGAACCAA$ 

 ${\tt CCAGAGGAGAAGCCACCAGGTCACTCAACTCTTAGTATCATCTACTGGAAACTGGCTAAGACAGTATTTATGTGCTTCTCTCACAATAACAGGAAGATAACTATATCACACAATGGATATGGCAGTTGGCTTGACTGCAGTAATCAT$ 

 $\label{eq:condition} \mbox{AGGTATAGAAAAACCCTGTCCCATTTTTCCCCAGAAAGTGTTTATGCCATGTATCAGTTGCCCCAAGTC} \mbox{AGACAGCTACCTCCTGAAGGACTCCTTAAACTTCTTAGCTCTGTGAACAGGGGGACAAGCATATTCTAG} \mbox{TCTTTCTAG}$ 

 $\label{eq:condition} \mbox{ACAGCTGCCATGTCAAGTACCACGGCCTTATTCATGCCCTGATACAAGGTGGACATTGCACCTTCTTG} \mbox{TCAAGACACTGGATGAGTTTACACAGCAGCAACAGGAGTATTTCTGGAAGCCATTACTACACTACAGTGGAAAACGA}$ 

 ${\tt TTGTTCAATCTCTGAATCTCCTTAAGGCTGGCTTCACCTCTGGTGGCAAAATGACTAAAGCTACATGTCCTTATACCTCACTGTCATAATGAGAGCATGAGAGGCAATGCTTGGCATTCCACGTAGGAGTCCAGCAAAATGACCTGA$ 

TGCATCTATCTGCTGACCCCCTCACTCACCAAGCCTGAGCACCTACTGCATGCCAAGAACCCTGCTAGG CACTGGGGTATAATGATAAGCTGGAAAGATGGTCCCTGCCTTCCAGGAGCTCAGTCCAGTGGAGGAGAG GAACAAGGT

 $\label{eq:gccctcagacttcagactagcactagcactagcacttcccagattcttcgaccttttgccctcagacttagctt} \\ \text{ACACCACCAGCTCCCTTGGTTCTCAGGCTTTGGCCTTGTCCTGCACTGTGCCATTGGCTTCCCTGGCTCTGCACTTG} \\ \text{TGCAGCTTG} \\$ 

 $\label{trace} TTCAACTTGAGACTACAGATCCCTGGGCTAGGTCTTCAAGGGCCCTCCAGATCCAAGCTATGCCTCAGT\\ TTTAGCTGAAGTTGTGTCCAAGAACACAGGTCAGGGTACAGGGAGATGGGATACGTATAGCTCCAGACA\\ TGGCCAGTG\\$ 

 $AAGAGTGTACATCAAAAATAAGTCATTCTCCTACCCAGTCCGGGCCCCTGTAGACATTGTGGGGCATGG\\GATACATTGGAGCGTTCCAGACAGAAGGACTAGCATGAGCAAGGGCACAGGGGCCAGAAGCTTGTTGAGGGGTGAGA\\GGAGTGAGA$ 

 $\label{thm:condition} TTTAATAACTCTTTCCACCTTGGCTTCCACGTTGTTCTATTCCCTGACCACAGGAGCTACCTCGATGCAGAAGTCCCATGGGACCAAACCAGCAAGGGGACGGGGTGGAGCAGAGCATACTGAATGTCTGATTAAGAACCTCCTGG$ 

 ${\tt TAATGTGGTCATGTGATGAAGAGCTAAGGCTGAGAGAAACTGCAAGGTTTCTGCTGCTGAACAATGACAAGGTTCACTGGTGTTCTCAGGTGCAAGGGAGAAATAGGCCCTCATTGTAAGGCAGCATCAGCCCTGCCATTGTTTCT$ 

 $\tt CTCCTCTATTCACCTTTTTCCACTCTACTCCTGCCTTAGGAGCCTAACCACTAGATACTTTATCAATGAGCCTTCTGGTTTCTGACTGGGTCAAGTCAATCAGAGGTATCTGTAGGAGACTGGGAGGAAGAAGGAGAATGAGGTCAG$ 

 ${\tt CACTAGATATCTGAGCTTTTAGGCAAGACCTGGGAGATCTGGAGCAGCCAAAGACCTGGGCAGCACAGAAGCCTGGGCAGCACAGAAGCCTGGGAAGCATTCGTGACAGCAGGTATGGTGTTCCAGAGAGTCTGGCAGCTCTCAGGCATGAAATGT}$ 

 $\label{eq:condition} \textbf{AGGAAGTCAAAAATATGGAGGGGGAAGGATCTGTGGCTATGGCTATGAGTGTTAACTGGAGACATTGAGAGCAGACCAGGGAAAAGCAACATACCTATAGCAATTAGCACACCCAGGGCCCAGATCTTGTCTCCCAAATGCCC$ 

 $\label{eq:GGAACAGTAAGGCCACCACAAACTGGCAACAGCAGAGACCAGCATCACCCTAGGCAGGAGGGGCAAAGGCATGAGGGGGGAGAGGCTATGTCACCTGGCAGAACTGCTACCACAATGGGCTGGTCCTTGCTGCA$ 

 ${\tt TTATGCACATTTTAAAAACTGTTTAGGAGGTCAGGGAGTCCCAGGATAGAAGGCAGACCATGACAAAAG}\\ {\tt ACTCTTACTGGGTTACAAATGTGAGAAGTAATCACACTGAAAGGAGGTTGGGAGGGTAAGAGCTGACCTG}\\ {\tt ACTAACTTG}\\$ 

 $\label{thm:condition} \textbf{GGTGAGTGTGCTGATCTTGTGGAGGCTTGGTAATTATAGCTGGTGCATTATTAATAACATTCTGTCTC} \\ \textbf{TGCTTCCTAGTTACGTACAGTTGCTTGGGCCGAATGCTGTTAAGCTTGAACCACGAGCTCTAAATTGTTCACCTTGTC} \\ \textbf{CACCTTGTC} \\$ 

AGATCTAGGAGAAACAACAATGACCCAATTTGACCTGAATCCCAACAACGCGCAGAGTGTGCATTGCT TCCGAGAGTACTTGGAGCATTCGCAACACTCAACAAAGTTCAAAGGACCAGTCATATGGGGAACATACA CCATGTAAC

 $\label{thm:condition} \textbf{GGCTCACCAGGTGCCATGTTGCGTGGGACCATGAAACTGTGGTGGTCTTGTCTCTGCCACAAGATAATGTCGGCTTGGGCCTCAAGATAATGTCGGCATGGTGTCCCATCTTTGGCATGAGTCCTACCCTTTCCAAGTGCAGTGGTG$ 

 $\label{total} TGACCCTCCTTGGAGCCATCCCTGTCCATACTCCACACCCTGCCCACCTCCCGCCTGAACTTCTAGACCCACTACTTCTATTGCATCCTTGACTGCCCCAGTCCTGTTGATGTGCAGTGCTGTATTTCACGTGTGCAGCTCCCCC$ 

 $\label{thm:coccca} \textbf{TCCCCCCAGGCCCAAATCAGTGGCTCCAGAGAGCACAGTTATCAAGAGATTATCTGGTCCCCAGAGTATCGGGAGGGCACTCAGCTGTGCCACATGCCTCCGAGTGTCCTGAGGCGAGTGATTATCTCTCAATAACCTGTAAGGCCGT$ 

 ${\tt ACAAGATGCTCCTGACCACATGGCCACATCGGACATGGGGAGACGCTTAGGGAATTCTGGCTTCTATT}\\ {\tt AACCTTGCCGTGATCTTTACGTGAAGCCAGAGCGAAGTCTGCCTGTCCTCAAGGCGCAGCTGGTGGGAGTGGAGATGG}\\ {\tt TGGAGATGG}\\$ 

 ${\tt GAAGGAGATGATTCAAAACGCTGAGCAGGGAGTTCATAGGCAGGAGACATTCAGAGGGACACAGCATGGGCAACAGCTGGGAGGCAGGGCTGATCAGGAGGCTGCAGCCTGGCCTGTGAGGATAGCGTGTCTTAGGCTGACATGGCA$ 

 ${\tt GTCAGCATCGTAGGGCCATAGCACTGGACGACATCACTGAGACAAGGGATGCAGATGGGAAAGAGAAAATGTAACCATACCATGCTTATTGCTTACCCCATCCCACAGATGACCTCTCCAGTGGGCTTTCATCTTTTTGCATAATA}$ 

 $\label{totagga} \textbf{TTTCAGGGAGACAAGCATCACAAAGCATCTCTAGAAGTAAAATGCCATCCAGGGGTTCTGGGCCACCAACAGAGCTGCTAAGTGCTACTTCCTTTGTCCTGGGCATCCGATAGCCTAAGGCAAGGTACAGATCCCTAGGGGCT$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGAGATTCTAGCCCCAGGAAGAGTTGCCCTAAGTCATCTTCAAGGCACTTCGGCTGTGTCCATCT\\ GCACACCTCCCCATTTATAGAGGGTGTGGCAGGCACTTGACCCAGGAGAGCTTTGGGACATGGAACTCG\\ CTGGGAGGC\\ \end{minipage}$ 

 ${\tt TCACCCAGAAGAGCCACTGGTCACTCTGGGTTTTGTTCCAGAGGCAACTTCTTACATACTGGTGGGTAGACCTCCTTAGTGTAGGCTCTGAGGTTTGCTGGTGAACAATTCCATAGGAAGATCTGCCCGGAGAGGACAGGCCTTGGC}$ 

 ${\tt TAGGACCCTGCTAAGGATGTCAGTTATCTGCTGAATGGCTCCTTTCCCCATATGCCCCAGGATAATCGA}\\ {\tt AACTCAGCAAACTATTTCTAATGAGCAGGGAGCTTAGCCATGGCTTGATGCTCTGAAAAAGAGTCATTATTTTAGA}\\ {\tt TATTTTAGA}\\$ 

 $\label{total} TCTCATACTGTTTCCTCTTTGTGGGAACAGAAGCAGTTTCTTCAGCCTCAGACCTGAGTGATGAGGGTC\\ TTGGCCAGCACCTAGACCCTCAGAGTAAGGACTCCTAAGGATCAAACTGCAGTGGGCACCTCTTGTACC\\ CATCTGTGG\\$ 

 ${\tt TGAAAGGGACTCAGGGTCAAGGCCATGGTGCATCCCTCCTGCAGGGAGCTGGAGCTGGGAGCTGGAAGCTGGCCTTGGGCCAACCTCTGTCAGTCCCTTC} \\ {\tt ATCAGGCCA} \\$ 

 $\label{eq:condition} \textbf{AACAGGGCAGTCACAGTAGAACTCTAAAGCTGGACGATCCGTTAAAGCCATCCCAAGTTAGGGGTAAGTGGGTCAGGTTGTTATAGCCCTACCTTGACCGGTCATTGGATGTGGGCTGACCTGGGAAGGGTGTGAC$ 

 ${\tt TAGTGTGGGGAAGGTATGGCCAGAAATGAGGTGGAAAGTGGAAGCTTGGCCTGGGGAAGTGGTGGAAAGCTTGGACCTTGAACCATGACCCTGGTTCTGTTCAAGGCAGGGCTACTCTCTGCAGGGCTCTGAATTCTCCAGGATTTCC$ 

 $\label{eq:GGAGCACATACAAGGTCCTTGCCAGATAATCTGTAACCCATCTGCAATGACGCCATTTGGTGTCAGAAGT\\ GGGACAGACATGAAGAGCCCACCACAATGGCCACATTTTGGATAGGGATCAGAATATCAAAGTAGGACA\\ CAATGAGTA$ 

 $\label{lem:condition} \textbf{AATGCAAAACAGACACCTCAATATTATCTCAGCCAGAAGACCCAATGCCCAGTCATTGGCTAGGGCTGCCTGGTAGGATGTGAATTCACAGACACAGCCATTGGCAATGCACAGGGCAATATGGGTTCTGAGCCTAGGGATGTCT$ 

 $\tt CTCACTTGGGTTATAACCAGATATGACTTTGAGTGACACTGGCCCAGGTCTGAGATGGATAGGCACAAT\\TGAAGAGTGTGAAGAGCCCATCCTCAGTGGTGCAGGGCAGTGATTAGGCAAAGCACATCCCCTCGGCTT\\GTAGGATAA$ 

 ${\tt TCCTCTTGTTGATCCTCCTGCTTCTAGAGTCCAGTCTCTCATATTTGAGGAAGCAATTCTTACCCAGAGACCCCAGCTGCCTTTCCCCTCTTCAGAGCAGCTCTCACTCTATAACAGTGGGATGAGTCCTGACCAAACAGACTG$ 

 $\tt CTCAAAGGGGGTCTAGTTTGGGAACTGTGAATCGTATAGTCAGCCTATGTCCAGCCCTCTTCCAGTGGTGACAGGAGCCTCACGGAAGAGCGCACAGGGGCAGAGTATAGTTGCACCCCCTGGCCCCAACGGGCACGAATTAGAGC$ 

 ${\tt TACCAATTGTGTTGTCAGGCACTGAACAGGCAGGGTACCCGCTTTGTACTTCCCTGAATCTCCATGGCC} \\ {\tt ATTGTCCCATTCCAAGCCATTGTTCTCTCTTGTGAATAGGATGTAATAGGATTTGGTGTTACAAAGTCCACCCTG} \\ {\tt TCACCCTG} \\ {\tt CACCCTG} \\ {\tt CACCCT$ 

ACATTTGCCACTAATTCAGCACTTACTCCCAGAGAGCACAGAGATTCTACCCCTGGCACTTTAAAGGCA TTATCTCAATGGCTTCTCATGCCATCCCTGCAGAGTAGGTGTGACTCACACCATTCCTCCAGGTGGGA CACTGAGGC

 $\tt CTTCTAGTGTTTGAAGGCAAGTGTTTTGGTATGATACAGGTCCTACACTCAAGCAGATTATTTCATCCC$   $\tt ATGTGCAACGGAAGAAGCAGTGATCTGCTGCAACACTGGGAGAAACTGGGAGAAGGAACTCAGCCAT$   $\tt ATGGAGATA$ 

 $\label{totalact} TCAATACCGTTTTACAGATGAGGAAACTTAGGCACTGAGAGGAGGAGGAGCAAGTTGCCCAAAGACAGGTGGGAGTGGAGTCAGGATTGAACCTACATTTGCCTGACAAATTGCAAAGCTAGACCTCTAAGCCCCTAAACCAGACCACATC$ 

 $\tt CTCAGAGTAATTCCTGTAGAGAATACACCATGGATGTTAGTGTTCTGTGGCCCCTGGGTAGCCTGGGAGTAATTCTGTGGGCAAGAAAAACACCCGAGGGTCTCATGGGCAGACAAGGGGACAGTTACTGCATGTGTC$ 

 $\label{eq:constraint} \mbox{ACCGTTATTCCATTTCGTAAACCCTAAGCATTTGCTCTGCAAACCTCCTCCTGCTTGGTCCTTGCTCTTACCCTTGTCTGAGAAACATGGTGGCTGAGCTTTGTGACTGCAAGGCAGGGCTCATCCTTAGGGTCTACCCTGAGGT$ 

 $\label{eq:GGCTAGGAACACATTTCAGAGGGAGGCACGGATGCCCAGAGACTTCAAACACCTTTCTTAAGGTCACACACCTGTTAGACCACTGTAGACCACTGTAGACCACCTGTTTGTCCCTCTACACCCGAGCCCCTGTTTGTCCCTCTACTCTGCA$ 

 $\tt CTGAGTCAGCCTGCATCCCTCAACAGGGACCTGGAACGGTACCACCAGGGTGGCCATCAAAACCCTGAGGCCTGGCACGATGTCTCCAGAGGCCTTCCTGCAGGAGGCCCAGGTCATGAAGAAGCTGAGGCATGAGAGCTGGT$ 

 ${\tt CCATCAACACAGGGTCCCAAGAGTTCTCAGCCACATCAGCTCCAAGAAGAACTTGTTTCATTGAGGATT\\ {\tt TAGGGGAACTGTCTCATTGGCGAAGAGAAGTTCTCCTCCCCCTGCCCCGATGTGACTCGTTAAGGTTTG\\ {\tt GGGTGCCCT}\\$ 

 $\tt CTACCAGTGACAACTCCTGTTTTCCTCCTGATTCTCCACGGCTGAGGACTCAGAATCACAAATGCTAGTGGGCTGAGTGTTCAGACACAGAGGTCGTGTTTGGAGCGGAACACCCAAGTTATGGTTAGACTGAAACAGGATGTTGGG$ 

ATACTAGGACAAGGGAGAGCATGCATAGGCTCCCTACTCCCTACCCCCAACTCCCTTACTCTCAGGCAAAGTGTGATGCACAGGGAGATGACATAGTAAAGAACATACCATCTTAGGGCTGGGATGTGGAGGAGCTAGAGTGCCAGG

 $\label{total} TGCTGAGGATCCAATTCTGCAACTCTGTTATGCAACTCTATTCTGAAGAGGGTGGGGTAGAAAGCCTCA\\ TACCTCATCAGAACCCAAGAGGCAATATCAGCCTCTTAGCATATATACAGGAGTGGGAAATGGCCTTAC\\ AGCAGCTCC\\$ 

 ${\tt GTGCATGTGTGTGTGTCCCGGGTTACAGAAGGGGCTCTGGGGTCAGATGGCCTGAGATTTAACCCCACTCTTCAGCTACTCATTAGCCCACAACCTCAGGCAAATGACTTAACCCCGTGGTGCTTCTGTGTCCTCCTTCATGCTGT$ 

 ${\tt GTAACCTCTGTTGGTTATTTTGATCACACATGACTCTGATGCAAAACAGCTTTGCTTTGGTCTCCT} \\ {\tt AGTGACCTGCGTGAACTGCATCATTAGGCAGCTGGTAGAGGTCTGACTAATTACAGCAAAATAAAAAGG} \\ {\tt AAAGTCTAA} \\$ 

 ${\tt GAAGTTGCCCAACGTGAGGAGGAATTGAATTCGCTGAAGCAGAAGCTGGCGTCGGCTCTTTTGGCTGAGCAGGAACCGCAGCCAGAACGGCTGGTTCCGGTGTCGCCGCTGCCGCCGAAGGCCGCTCTGTCCCGAGATGAGATTCTG$ 

 $\tt CCCAAGAAAGAAACCCTGTGCCCATTGGCAGTCACACTCCGTTGTGCCAACTCCCTCAACCCTTGGCAACCCATGGCAACCCGTTGTGTATCTATGGATTGGCCTATCTGGACATCTCACATAAATGGAATCGTAGTCTTTGTGACTGG$ 

 $\label{eq:condition} \textbf{GTTCTAAGTACCCAACACCCTTACCTTCCCTGCTCAAAGGGGCCCAAGCTGCTTTCTAAGGCTTTAAAAGGCCTCTTGGCTGGGTCTTTCCTGCAAGGGTGACCATCACTGGCATGCTCACTGCCCGGCCAAGAGGAGGCTGAGGTG$ 

 $\label{eq:GAGAGCACAGGACTGCCAGCCTCTTGATTTGGTGCTGCAGAGACCTAGGGAGCACCCAGGCTTGGTGCCGAACATCCCTGCCCCTTGCTGGGTAGCCCCAGGTTGCCCGTTTGACATCCCTGAGCCTCA$ 

 ${\tt TCATATCTCATTTTCAGTGACCCTAGCATCTCTGAAGTGGTTCACTTTGTTTCTTCAGCTTCACCACCCTGACCTTCAATCCCACACTGATAATCTTATTTGCAGGTTGACTACTAAAAAAGAGTACTATGCTACTCCAGTCCTCC}$ 

 $\label{total} TTCAGTTCTCCCCACATACCTGCATGACCTCTGGAAACCTCATACCTGATGGTGTCACTGGTTCAGAATCTCTCAGCAGCAGCTCCCTAGGACATGAAAGGTCCTTCATTTGCTGAGCAGTATCTCCTGCCAGGTGCATCTTGCACGGG$ 

 $\label{eq:condition} \textbf{ACCTTTAACTTGATATGGCTCTGACCCCTTCTCCAGCAGCTTGTGCATTTCACCTCTGTCCCCAGGTCTGAGTGTGACCCCACCTGTCAGGCCCAGCACAGGGCCTGGAAACACAGCCTAGATTCAAGAAGATACTAGTTA$ 

 $\label{thm:condition} \textbf{TTCTAGAGTGACTTACACAACCTGGCTGCCATCACCTGCTATGCACTAGGCTGAATGGTACAGCCTATT\\ \textbf{ATTCCTCAGCTACAAACCTGCACAGCATGAGACTGTACTGAATAAGACAGGCAGTGGTAGCACAATGGTAGTACTTG}\\ \textbf{AAGTACTTG}$ 

 $\label{temperature} \textbf{TCCCCACACATGCACAGCCTCCCTTATCACCAACACTGGGCACCAGAGTGGTCATTTGTTACAACTGATGGACCTTCATTGACACGTCACTATCACCAGAGTCCATAGTTTACATTAGGGTTCACTCTTGGGGTGGTACATTCTATA$ 

 ${\tt CAGCACTTCCCTGCGGGCTTGGTTCTTTGCCTCTAAAGCCTGGGGTTACTGTTTGGCAAGGGATGGGGGACTAGGCCTCCTGCTTGCACACTGCTAGAACTGAGGGTGTAAACCAGCCAATCTTTCGGGGAGTTCTAAGAAGAGGT$ 

 ${\tt TAGAAGGAAATAGCTGTCAGAATAAAGAGAAAAGGAGATGGATTTTCCACCTTGTCATGATTAACACACTTTCTCAGTCGTTCTTGGCCAGCATTTGCAAATAGTGACTGTTGTGGCTAATTGGAGTATTCCTTGCAGTTTTCTCAT$ 

 $\label{thm:condition} \textbf{GGACTGGCTGGTTCACAGACATCTTTTCACTGCATGCCAAGCTAAGTCAAATAAGCTAGAGTGACAGTA\\ \textbf{GAATCCCAATCTATGACTTCTGGTGTTCTAGGTCTTGTAACCTAAGCAGGAGGTTGGAAGTGGGAAGAT\\ \textbf{GCTGAACCT} \\$ 

 $AGTCCACTGCACTTTGGACCCATTGTAGGCAAAGCTGCCACACCCAACTTTGCATATGTTGAAGCTTCT\\CTAGGGTGAATACCAGGAAGTGGGATCACTGGTCTCAGAGTTCATACGTTTCAACTGCCAAGCAGCAGT\\ACATGAAGA$ 

 $\label{thm:condition} \begin{tabular}{ll} GCTCCTCGCAAACCACTCTAGGAGTCCCAAGGCACAGCTGTGACCCCATCTGTGGCCACTCAGCAAAGGGAACCTTGCCTTAAATTTGTTGAGCAGCAGCTTCAGGACCTGTGGGGTGGTCATGGTGCTGATGCGGACGTTGGT\\ \end{tabular}$ 

 $\tt CCCTGATCCCTGCAGTGGGCCAGGCCTCCTGGTTACCTGCTCCCATGGCACCCTGCACTGCTCCTGGTA\\ ATACTTAGCAGAGGTGTGGTAAATCATTACTAGTGTAAGTTTATAAGCAAGGTGGGGATGGGGGTCTTGCTGTATTA$ 

 ${\tt CAGATGGCCCATGTGCTGGAAGATGACACAGTTGCCTTCTCCGAGGAACCTGCCCCCTCTCCTTCCCACCAGGGCGCGTGTGTAACATCCCATGTGCCTCACCTAATAAAATGGCTCTTCTTCTGCATCAGGGGCCCTTGTCAT$ 

 $\label{thm:condition} GCCAGATGAGTAAACAGGGAATTGAAACACAGAGGCTTGTGGTTGCTGTTGCAGCAATGATGATAACCACTGTAAGAGCAGCCACCACGCACTGAGCAAAGCCCCCGTGCCAGGCCTGTTTTGAAGAACTGCACCTGTGTTCACT$ 

 ${\tt CAGGTCATACCATCTATGCTGAGCCCTTGCTGGCCCTGGCTCTGGCCTGAGCAGGTAGTGGCAGCCAGGCAGCCAGGCAGCCTGTGTTCCATAAGGTGGGCTTCCTCCCCTACCCAGGCTTGACTGAGCCATGTCTGCATGCTTGGCAGCCA$ 

CTACTGCATGGTATTGTATGCTAGAAGGGTGAGAGGTGTAAAGGCCTGGTGCAGAGTAAAAGCTTAGTC AGTGATTGGCGTTATTGGCGTTGCTGGTTCTGGATCACAAAAGTGGAGAACTGAGACCTGAACTCTCAG GGCACTTAG

 $\label{thm:constraint} \textbf{GTCTAAGAATCTGTAGATGCAGAGACAGACCAGAAGACAAGACAGCCTCATGTGCATGAACTTAGCCAAGTTGCACACTGGCTTGACTAATCTGTCTTATCTCCTTATCTCTGTGAATGCAGATCCCTGAAACACTGT$ 

 $\label{eq:condition} \textbf{ATAGACAGCTGGATTAGTTTGCTGGAGAATGGCAAATGTGGAACATACCCAGGTCACCTAGTTTTGATGAGCTAACAGCAAGCCATCCTCTACACAGCAAGCCATCCCCCACACATGTTTAGAGCCAAGCTGAGAGCAGAGAACAA$ 

AGGATGGCTTATGTACTCTCTGGCCTGTATTTGTTCCTAGCACCCCTGGTTTGAGTTTACCAGAAGCCA GTGTGAGATTCAGGGGCCAATGTGTACTATCAGCGACAAATATTGGTTATCAGGTGAGAGGTCCTGTCT AAAGTGAAG

 $\label{eq:condition} \textbf{ACATCAGAATCGCCTGGGGGCTTGTGAAGCAACAGAGTCCAGGCTGCACGCCTGATTTTTAATTGAGTGGTCTGGGGTTGGGGATCAGGATCCTGGCTGACGAAAGGCACATGCAGCGCAGGTTGAGAGTCATGGACTAGCAAAA$ 

 $\tt CCACCTCCTACCCTTCTTTCATTGAAGGCTGTTCTTAGGGTCCTAACTGCTTGGCACTTCTGAGCACAGTCCAGAGAGTGTGGGTGAGGCGCTGCAGCATCTGCCACAGGGGCCATGGGGATGCCTGAAATGGCTCAAGAGAGGGC$ 

 $\label{eq:condition} \textbf{AGTTAATTCTTGCTCCTTCTACATGTCCATCAAGGGTCAGTTGGGAACTAAACTGTGCTTCTGTGTAGTTCTCCCTGCAGAACTCAGGCTGACCAACAGCCTGTATCTGGGATGCTTCCAGTAATGACAGAAGAATGAAGCTTTGGA\\ \textbf{AGCTTTGGA}$ 

 $\label{eq:cocc} \textbf{ACCCCTGAAATCATACCAGATGGCCAGTTACTACTCAGTCTCTAGATTCAGCTGGTTCTGCAAGAAGAGTTATCAAGCTATCAGCTTTCTCTTGCAGGCATCCTTCTGTACCTTTAAGACAGAGCATCTAATTAGCTTTGGGTGGTTT$ 

 $\label{totalga} TTGGCATGAAGAAACTTCCTCCAGCTGCACCTGGTCCCTTGGGGGAGTTCTTTTAGGCATAGTCTAAGGTTGGGGAGGAAGTGGCATGGCTTTGATAATAGGGGACAAGGGTGAAATTGCAGCTTGCACTCTCCCTGCTGTGA$ 

 $AAAACTTTGCCAAGACTGCAGATGATTGCAGAAGCAGCAGCTCAACTCAGCATGTCCCTACCAGCTTTT\\ TGATGCTTAAATCCTTCAGCCTGGGGGCCCAGCATGGTCTCCATTGTGAGGACTCAGTTGCAGATGCTA\\ CTCACTGCC$ 

 $\label{total} TCTTCATAAGATGCAACTCTCAGCAGGTTACTCCCCATCTCAAAACCCTGCAGTAACTTCCCAGTGCCT\\ TGAGGAGTGTCTCAGGGTCAGGATCCCTAGGGAAAAGATTCTGAAGCTGAGATGATGTGTGGGAGATTTA\\ GCGGGGAGT$ 

 $\label{eq:condition} \textbf{AGGAGGCATCTGCTTCTGGGCCTTCTGGTCACACTGAACATGTCTAACCCCTTTAGCCTGAATGCCCTTCACACCCAGTGAATCACACAGAACAAGATGACCTAGGGAACACCAAGGGATGTAAATGCTGGCAA$ 

AGTCTACCTCTCTGCCTTTGTCCATGGCCTTAAATGCCTTCCCAGCCACAATCTAGCTGTTGAAATCTC
ATCCATCCTTGAATATCTAGCTCATGTAATGGTAATGGCCATAGAACAGCTTCTACTAACCACCCCCAG
CAAAAGCAA

GAATGGGAGCTCTCATTGTTATTGGGAAGATTAATAGTTCTGATGGTAGAATAGTAGCAGCTGTTGTGG CACCACCAGCAACAAATACAAGCAGCCAGGAGGTGCAGGTCATTCGGCGACTATAAAATCGGAACAGAG GTGAACTGT

 ${\tt TCCGGTTCATGAGCTTATGTGAGCCCCTAAGACACCCTTAGGAGAGGGACAAGAATGGATGTCCTTTGTTACAGAGGAAGTAACTGAGATTCCAAGGGGCAGTGACTTGGCTAAGGTCAACAGGTCATAAGAGGCTGACAAAGTGA}\\$ 

 $\label{thm:continuous} \textbf{GTCCCTCATCTGCAAAATGAAGATAATAATCACTTCTCTACAGAACACATATGAACTAAATGGAGAAGGTACATGGACATGCTGGGCTCAGTGCCTGGCACATAGTAGGTACTCAGGACAAGTTGTTTAGTGTTCAGTGTCATGCAT$ 

 $\tt CTGTCACGATGCCTCACACCCCATGTCACTGACCATAGGCACCCAGAGTGCTGCAGGGTTCAGGACCACCACCAGAGCTCAAATCTCAGAAGCCAACTAGACATCTGTGGATTTGAAGGCAGGGATAATGAGGACACCACTCGGTCAGT$ 

 ${\tt TATTCTTTCTACACCTATCCCAGAAAACAGTGATTTCATGCCTTGTACCAGTTACAAACATGCCCAGTAACAAGGAAGTCCATAAACCACCTGATTTCTGTCCACCAAATGAGCTATCAAGAAACAGCCTCGGGGAGGAGCCAAGAT$ 

 ${\tt TACCTAGACGTCAGGAGGCAAAATGGGAGGAGAGGTGTGGGGCACCCTGCGTGTCAGGGAAAGGGCTGAAGGAAAACCATGGTAAAGCCAGAGTCAGACTCACTGCTGGTGCCTTGATGAACGCAGGGGATGGCAACTCTATGTAGA$ 

 ${\tt TAAACTGGTCATAAGGAGCAGTTCATGAGGTCACAGGCATGGGGTGAAGGACAGGACACAATGCAACAGGAGTTTGTGTCAAAGGAATCTGAAGTGCCTGTTATGAAATCTACTCATATATTCCAGACCTACTCAAACTTGATCTCT$ 

 $\tt CTTCATGGGCTGATGTTGAAAATCCATGATGTTTTTGACAGCATTGCATAGCCTATTCTTGCTGGATACTCCCCTACTAGCTGGGATAATCTGCTGCAATAAATGGAAGTGGTTTCTACACCTCACCCAACTCTGAGTACAAATT$ 

 $\tt CTGTTATCAGTGTGTTTTGCTGATCTCCCACCTCAGTCACTCCCGGCAGTGAGTTTAGGGCATCTT\\ GGGAGTGGAGGTAGGTTGTGGAAAAGATGTGTCCAGAGATCTCATTTGGCTTTGGTATCTTCCTGAAAT\\ AAATGTCAC \\$ 

 $\label{totalgat} TTCAGGCTTGAAGTCAGATGATGTTGGTGCCCTGCCCAGGGGTCCCCAGGTGCTGTTTGGCAGTCAGAGGGCTAGCTGTTTGCCCCTTCTTGGACAACTGCCCTCAGTCAATGGGAGCTGCTTCAACTGGGTCCATGACAGCTGCTT$ 

 $\tt CCTCTCTTTGTCCCTCAGTCCACTTAGCACATCACTGGGACATGTGGACACATCTGGATTACCACCTACATGGCACCCACAGGTCAAGGGGACAACGGGCTGCTGTTACCACAGGTTCGGTGCCAGCTTAGTGCTGTCACGTGGTCA$ 

AAGATAACATAGTTAGTTCACAATTGAAGAAAAGCTCTCCCACTTCTTGCAATAAACACTGTCATTGCT CTGCCCATACCCTTGTTCTTGCCACTTTAGTGCATTCTGGGCTGATTTCCAGCTGCCAGTATGTGCATT TCTTTGCCT

 $\tt CTGTGCATGCTCCTGGTGGCTTGACCTTCAAAATATGCCAGAACTGCCCATTTCTTACAGCCTCCATAGTCCCCATCCTGGTCCAGAACACTGTTAACTGTTGTGTGCAGTTTTGTGGCAGTCTCCCATCTGGTCACCCCTTACTAT$ 

 $\label{total} {\tt TCACAGGCTGTCTTGCAGACTGGTTACCACACACAGAAATTGGGACTTGAATCCAGGCCTCTCTGATGTCACGTGTCTCTGTGCTGCCCCCCAAGCAGCCTCTTGAATCTGTGGATCCCTCTAAGTGTATGTCAC$ 

 ${\tt TACACAAACCTAGGTGGTATAGACTACCACACACACACATAGGCTATCTGGTACAGCCTACTGCTCTTAGGCTAGCATCCTGCATGGCACGCTTACTGTATGGAATACTGTAAACAATTATAATGCAATGGTAAGTGTTTGTGTATCTAA}$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} $ACGTTCACCAGGACCAGGTTACCACACAAACAGTCTCCATCCCTAGGACAAGTCACTGAGGCTCACCCCAAAGGGAGCTGTGAGGCCCAAGTGAATTGA\\ \end{minipage}$ 

 ${\tt CAGTTGACAATGCCTAGAGACATGGTTGATCATGACTTGGAGGGCTGGGGTGGTACTGGCATCTGGCAGATGACACCAGGGAAGCTGTGGAATGTCCTACAGTGCCTGGGACAGCCCACCCCCTACAAGAAAGGAGCACCCAGCTC$ 

 ${\tt CACATTTTGGAAGAAGCAGAGTTGAGATTTCAACCATGACACTGGCTCAGAGTTCCAGCTCCTTAACACTGGCTGTAGTGTTGCTCTTTGTGCTGTACTGCAGTGGTTCTCAACGTGTGGTCCTGGGACCAGCAGCATCAGCATCA$ 

 ${\tt GGTCTGTAATGTCACATCTCTGTGGTCTGCCCTGAACTGCCTGAAGCAGGGACTATTGTCCCTACATGTCCCTAGTCCCCGGGCTGGCCTGGTTGGGTTGAGCAAGAATCTCTGGAAAGAATGAAAGGCAGCAAATGGAAAAACAT}$ 

 $\label{thm:condition} \textbf{GGCCTAGGCACAGAGATCAGCTCCCTAACTATTCTGTTGATGCAACAGCATCACTGGATGTCTCATATC} \\ \textbf{TGAGATACTGCTGATCTGTTCTCCTCTTGGTTTGGGCACAAACCATGCAGATGGGACATTAGTGATGTT} \\ \textbf{CCGATGATG} \\$ 

 $\label{eq:condition} \begin{tabular}{l} GCAGTGCTTCTGCAGTTTCATTAATGCATCATCATCTTTTCCACTTAACAGAGCTTCTCTTT\\ GGTCCTCATAGTTTCAAGACGGAAGTGAAAGGACTGTGGGAGTCAGGACCTCACATGGAATAAACCAGG\\ AAGGCAGGA\\ \end{tabular}$ 

 ${\tt TAAGGATGTGCTCCACCAAACCAAGGGAGTAACCCAAAGAAAAAGACACATGTGGGAAATGGGAGATCCAACACAGGGGAGAGGGATGAGGAATCCCTATGAGGCTGAGATGATGAAACTTGGAGGATTGGAGCAGAGAGACTC$ 

 ${\tt AACCCAGGCCCCTCTCCTTCCCACCAGAAGTCTCTTGCTGGTCCTGCAGACCTAAGCTGCTTATAGCAGCCGAACATCCAAGTTCACTAAAGAGGCCTGACCCCAGCAAGGCAGGTGGGAGTTAAGCAACCTGAGCTGGTCCAC$ 

 $\label{thm:control} \textbf{GCTCTCTCATGTGCAAGCTGATCAAGCCACATGAACAGCTGTCCCTTGGTTACCCCTTGGGCTT\\ \textbf{AGAGGGGCTTAGAGGGGCACAAACTAGAGACATATGCTGCCTTCAGCAGCCCCTAGAAGGGACCCAAGGGATCGGATA}\\ \textbf{GATCGGATA}$ 

 $\label{total} {\tt TGGCAAGTATGGTTCATCTGATTGACTGCTATGTTCAGATGTGTAAGGATGAGCAGACGGGTGGGAAGGCCCCAGAACAGCACTGCTCACCTTTACTGACCAAATCACTCTACCCATCAGCACTGATGAAACAGGAAAATCAGGTC$ 

 ${\tt AACTACTCGTAGAAAGGCAGCATGTTCCATCTGTATCATAGCATTGTGAGTTAACTGAAGGGGGTCCTAGGGTTACCAGTGGACACAGCATTTAGCCAGTCAGCAAACATTGCTGAGCCAGGTTTGGAGAGATGCTCCTCCA$ 

 $AGGAACTTGAAAAACTGGGCAAAACAATGCAAGAAGCATGAAACTTGAGGTTGTTATCACTGCCA\\ ACACACAAAGTTAAAATACATGCAACTATTACCAAGTATGTCTGCCCAAGCTAGTCAATGGACCAACTTC\\ TCACTCACT\\$ 

 ${\tt GTAAGACAGGGAGAGCTCAGCCTGAGCTGTTGACCTCTGTGACAGGCTGTGAGTGTTACATTCTTTTTTTGTGATCAAGAGCCCTTTGGCTTCCCTTTGGTGAAATCAGTTTGACAGCTCTGAGCTTCTTCCCTGCTTACAATTCT}$ 

 $\label{thm:condition} \textbf{TGCTAAGCAGAATTCTCAGATGGGCCCCAAGATTCCCACCCCCTAGAGTACATGCCTTGTACAATTCTC} \\ \textbf{TCTCCTTGAGCATGGAGGAGTCTGTGAATTTGATGGTGGTTACTATGGTGGTTACCTTCCATTACTT} \\ \textbf{AAGACTCCA} \\$ 

 $\label{thm:capprox} \textbf{GACATGCACCTGGAGTCCAGCCATACCTCAGCACAGCCCTCCTGCCCACATCGCCAAGGCCCTGTCAGAGGCATGACAAACAGCTTGGCTGATGGCTTATAATGTCAAAGATGATGGAAACAGGGAGGCGACGGCTGAAAGAATGG$ 

 $\label{eq:condition} \textbf{AGCCAATTCTCCCTACCTCCTCACAGAATACTTCTCCTTAATCTTGTTCTCCTTCATAGCCTTTCCTT\\ \textbf{GGTAGGTGCTCTTAGTATGATCAGTTCTGGCTGTTTATGCTGTAAATTCTTCCCTATTGTCCACAACAG\\ \textbf{AAAACTCTT} \\ \end{cases}$ 

 ${\tt CAAATGAACAGCTGGACGAAGAGCACGCAGGGCAAGGGCTGGAAGCATCCTGAGTGCAGGGCCTTCTGGCCCAAGGAGTTGGGAGGCGCCACTCCTCTGGCTTAAGGATGCTTCTTGTTCACCTTTCTGCAAGTCTCTACATGGT$ 

AAAAGGTGATTGCAATACAAGTGCAGTATAAGTAACATGTGTACCCTAAGATCTGTCATGGGTTCAGAGGAATGAAACTGAACCCACCGCATCCCACAGAGTGAGCAGCTGTTACTTATCTGTTGAGTATCCCCAGAAGAGGAAGTG

 $\label{temperature} {\tt TCGGCCTCTGGAACCTTACTTCTGGTGTCTCCTCCTACCTCGGTGGATTTTCCTCTTCTGGTGACAGGCACCCTTGTGCTCAATCGTGGGAATCCTCTGCTCTGTTATACTCATTCCCTGTGATGTCTGGTAGCCCACAGC$ 

 $\label{eq:total} \textbf{ATAGCCTTGAACTGGACAAGACAAGACAAGACAAGACAGTTCCACAGGGAGGTCTTGGGTTTTGGGGCTGCAGTCACTGACCCACTGACCCACCTGTAGCACCTCCTGTACATTCCCACCTCTCTGACCTTTGCT$ 

 $\label{thm:condition} \textbf{GGCCTGGGTGCATAGTAGGCCCCTGTGAATATTTGCTGGATGATTATGTCTAGAACTTGGCCCACAGTCCAGCAAGCCAGAAATAGCTGAACAACAAGTCAGAGCCACATAGGGGACATGCTCGGAGGTCAAGGTTGTATCTGAGGA$ 

 ${\tt GAGGGAACAGCAGAGCCAAGCCAGGCCAGCCCAGTCACAACGTAATTACTCAGTGCTCCACTGTGGGATGTGTGCTCTGCCTCGGGCCCTGCCCGTATTGTGGTGCTGTGGATAGGCTGTACCGTTCTGCAT$ 

 $\tt CCCAGCTTGCTGATCCAACAAAGTCTATTGCTTACCAGTCTAGCTTGATGAAGCCTTTTTGGCCAGAAGTCAATTTGTTTTTGGATCAGAAAAGTCTAGTGACAAGGCAAAGGCAAAGGCAAAGGCAAAGGCAAAGGCAAAGGCAAAGGCAAAGGCCAAAGGCCAAGGTCC$ 

GAGAACTACAGCTGGCTGTCCCCAGGTGGCTCCCAGCCCCGTCGGGGGGCGCAGCAGACCACACCCC AGCCAGACAGGAGCCGTCAGGGCCGCGCTCAGCTGTGCTAGTTACAGTGATGGATCCGCTGAGCTCCG GCTGGGCAA

 $\label{eq:control} \textbf{AGCTGCCTCTCATCCACTTTCCAATAAAGAGTTCCTTCTGCTCCACTTGTTTCTGGTTCCTATGACTTCTGGGGCTCCTGGATGCTTTGGGGAAATGGATGTAGAATTGGGACTTCTTCTCTCCAGTGAAGAGGGGAAACGGTCCC$ 

 $\label{thm:condition} \begin{tabular}{ll} GCATGTACTTGGACAAATGGCCAGGCATCAATCCCTCCTCAGGAGTCTGAAAGCTGTCCAGCTGCCCACTTACTGGTCCCATGAGGCCCCCATTCAGCAGCTCCTGCATCCCCCTAGAGCACCCCATTGCCCTTCTC\\ \end{tabular}$ 

 $\label{eq:condition} AGCAGAAAGGGAGATGCCGGAGGGGCGACATTAGGAGGCACCTTGTCCGGTGGTGCTGTGATTCCTCAT\\ GAAGGAGTTAGAGCCAGACAAGATAAAGGGCTTACAGGACGGGTGCCCTTCACCACACCCCCCTGT\\ TCCACCTCC\\$ 

 $\label{thm:condition} \textbf{ATATGGTCTCTGCCCTCAAGAAACTTGGAATTCAGAGGAGGAAGAAACAATTAAACCAATTAGTACAGCACACTTAAAATGTCAGCACGTGGGTTACAAGATCATGGAAGAGACTTACCCAAATTGCCCTGGTGTGTAGGATGGAA$ 

 $\tt CTGACATCTCCATGGGAAACATGCACCTTTACCAGTGCTTGGCAGAAGTGCAGGTACTCTGTAACCCCAGCAGCCCCTACTCCATCCGCTGTTCAGGTCTGCTAGTTAACTGGTATGCCCTAGTAGGGCGAACTGGCTTTGCATGTT$ 

 $AGAATCAGACGTTTTCAATCCTCTTAAGGCCTAGGCTCAGTACTGGCAGAATCACTTGTAGCACATCCT\\ ATTGGTCAAAGCAACCAACATGACCAGCCAGATTCAACAGGAGGTAAAACAGAGTCTATCTCTTGAGGAGAGAAACCG\\ GAGAAACCG\\$ 

 ${\tt TAGAAGCCAACTGTTTTGTCCTTACACTCTGAACAATTCCTAGACAAATTAGAAGGATGCCTCATGGCC} \\ {\tt ATTCTATTGCCTCAGAAATGTTTGCCATCCTTGGGTTACATTGTTTACTGGAGCCAGGATCTGCAGGTGAGAACTGAA} \\ {\tt AGAACTGAA} \\$ 

 ${\tt TTGATTTACTCTGGAGTTTCTAATTTAAATGCATCCCAGGTGGCAATCTCACAGGTCAACCTGGTTCCT}\\ {\tt GTTGGGCCAGATATTCTGGGTCCAGCTATCTCATAAATCACTTGCCCTGCCCATGCATTGGCTGCCCCT}\\ {\tt GGGGCTGAT}\\$ 

ACCCACATGCACCCCGGCACCGCAAAGCCTCTCCTGCAATGTCAAGGTCATTAGCATACCTACTCCACA GGACCATTTTACACATTAAGTGAGATGGTGCCTGGAGAGGCACCTGGCCCATCATGCAATGTGTGTAAG TCATCATTA  $\label{eq:condition} \textbf{ACTTAAAGCCTCATCACTCATGATAGTTGTTCTATAAAGCTGCCACGAACACTGAACTAGTAGACGCTGAATCGTTGCTCCTAGGAGAAGCATAGGGTTAGATTCCTGCTGGCCTCTGGTCATGTTTTTGTCAGCTGATCGGTACA$ 

 $\label{eq:control} \textbf{GCATCGGTCTCCCTATAGAACCTCATCATCATCTGCCCTTGTCATGTTCCTTTTCATTTGCAGACACCTTGGAAGCAGCCCTAACCTTATTATATCCATTATTAGTTACTAGCTACGGATAATTCAATTTTTCAGTTCATCTGCC$ 

 ${\tt CAGCAACCGGAGCTGGAGTCGGATCCCGAACGCACCTCGCCATGGACTCGGCCTCAGCGATCCGCATACGGCAGTGCCGAGGGCAGCCCCACCAACAGCACTACGCGGCCGCCTTCCACGCCCGAGGGCATCGCCTGGCC$ 

 ${\tt TCCAACACCAGAGTGATACATTTGTTACGATTGATAAACCTACATTGATACACCAAGATCAACCAAAATCTACAGTTTACCATAGCGTTCACTCTTGGTGTCCTATATTCTATGTGGTTGGGGCAAATGTACGATGACCTTGTGTTCA$ 

 $\label{thm:condition} \textbf{TGAATTAAGCTTCTTCTGCTTATGAAAGCAGCCTCCTTCCAGAGCACAAGTTGACATCAACCCAGAACCAGAACCAGAAGTAGAAATCAGTGGCTGGAACTTGTCTTATTCATCTCTGGAAAGTCCAGCTCTCCAGCAGAGGCTTAGAATTCTA$ 

CTCCTGAGTAACTGGGATTACAGGCATGTCTCACCATGCCTGGCTAAGTATTTGTGTATTTAGTAGAGA CAGGGTTTCTCCATGGTGGTCAGGTTGGTCTCAAACTCCCAACCTCAGGTGGCCCCCTGCCTCAGCCT CCCAAAGTG

 ${\tt TACCCTTGGTAGGCATGGGGATCCGGGCTGCACTAGCCAAGCACAGCCTGCCAGGTGAGTGGGCAGAACGCAGGGGCACAAGCAAAACTCCAGCAGAGGCACCACCAGCCACAGAGGTTTTGCACTGACCAAGTGACACCCCAAAGGAT$ 

 ${\tt CAGCTGACCCCATTTTCTCAAACCTCCCCATGTATAAGCATTTGTGACCCCTGTATTGAGCACCTGCTGCTGCTGCTGCCAGGAACTTGGAACTCGGGCTGAGCAGTATTGTGCTGGGGTTAGCAGGGAGTGGGAGCTGTGGGAGCCATGTGGA$ 

 ${\tt TGTGAAATTGCCTATTCTGAATATTTCCTAAGAAATCATGCAACATGTGGCCTTTTGTATCTGGCTTCTTCACTTATAACATTCTTGAGGTCCATCAGTTTTGTAGCACTTGTTCCTTTTTATGGCTGCGTAGTAGTCCATTGTAT$ 

 $\label{thm:constraint} {\tt GTTACTCAAACAGCAAATATTTATTAAACACCACATGTGAGCAAGAACATCTATTCAGCACAATGAGGGTGATAATAGGGGATGCAGAATTGTTGTTGGGTCACAGAGGCAGCATCTAATCTAGCCTAGCTGTGGGGAAACAAGGA$ 

GTCTGTGGTCCCTCTCCACACCTAATTGTGATGACCTTCTGAGAATAATGACTGCTGCTTCACATCTACCTTCCCAGCTTTGTGAATCTCTGGGGTTGGCCAGCTGTCACTTAGAATCATACAAGGAAAGGGATTCTGCAAGATGTA

AGTAAGTAGGGTGATCAGATTGTCCCAGTTTGCCCAGGTTTAGCACTGAAAGTTCTACATCCTTGGAAA CCCCAGTCCAGGGCAACGCAGGATGGTTGGTCAGGATATATGGGAGCATCTTCCCGATCTTTTCACTGG CCCAAGGAG

 ${\tt GAAGGAGTTAGGGTGGAAACTAAGGCTCCCTGCAAAAGCTATGGCAGAGTTGGATTAATCCTACCACAGTGCAGGTGTGAGGCTGGGTGTAGCATGGTATTGAGCAGAACACCTAGGAAAGCATATTAATCCTAACAGGCCAGCAGA$ 

 $\tt CTTGAATGCTAATTTTTAAGGCTGAGTTGAGGTGTCTAGTCTCTCTTTGTCATGTTATGCCTACCTGGTAGTGTTACATAGTTGCAACCACCAGCATTGTGTTAAAATTGGTTCACGTATTAGCTTTATCTCATTCCCTAGAAAAC$ 

 ${\tt CAATTTAAACAAATAGAGAAGAAGGAGTAGGTGGAGTAAATGTGCAGGAGAAGATAGACTTCGATGAGCCATGCCAGGCCATGCCAGGCCTGTGACCTCTGATGAATGGTGCCAGGCCATGTCAGGTCTCTGATGAATGGTGCTCATGTTCCATGTTCCAGGCCATGCCAGGCCTGTGACCTCTGATGAATGGTGCTCATGTTCCATGTTCCATGTTCCAGGCCATGCCAGGCCTGTGACCTCTGATGAATGGTGCTCATGTTCCATGTTCCAGGCCATGCCAGGCCTGTGACCTCTGATGAATGGTGCTGTGACCTCTGATGAATGGTGCTGTGACCTCTGATGAATGGTGCTGTTCCATGTTCCAGGCCATGCCAGGCCTGTGACCTCTGATGAATGGTGCTGTGACCTCTGATGAATGGTGCTGTGACCTCTGATGAATGGTGCTGTGACCTCTGATGAATGGTGCTGTGACCTCTGATGAATGGTGCTGTGACCTCTGATGAATGGTGCTGTGACCTCTGATGAATGGTGCTGTGACCTCTGATGAATGGTGCTGTGACCTCTGATGAATGGTGCTGTGACCTCTGATGAATGGTGCTGTGACCTTCTGATGAATGGTGCTGTGACCTCTGATGAATGGTGCTGTGACCTTCTGATGAATGGTGCTGTGACCTTCTGATGAATGGTGCTGTGACCTTCTGATGAATGGTGCTGTGACCTTCTGATGAATGGTGCTGTGACCTTCTGATGAATGGTGCTGTGACCTTCTGATGAATGGTGCTGTGACCTTCTGATGAATGGTGCTGTGACCTTCTGATGAATGGTGCTGTGACCTTCTGATGAATGGTGCTGTGACCTTCTGATGAATGGTGCTGTGACCTTCTGATGAATGGTGCTGTGACCTTCTGATGAATGGTGAATGGTGAATGGTGAATGGTGAATGGTGAATGGTGAATGGTGAATGGTGAATGGTGAATGGTAATGAATGGTGAAT$ 

 ${\tt TAGATTGGGCAGTTCTCCTTTGGCCCAGGGGCCCACTGTGTCATTGTGGCCTGTCAGATCTGCATCCGGGGCTCAAAGCCAGGTTACATGCATTCTGCTTCCCTGGATAGGATCTCTGTGACATTGCTACCCTGGAGGATTTGT$ 

 ${\tt TAGCTGAGACTGAAGGTTAGAGAGGTCATGACACTTGCCCCAGGTTACAATGTGAAGCCAAGGAGACAA}\\ {\tt GACCCCAGCCAAGACTATCTGAAATGAGACAAGACCCCCACTAAGGCTGTCCGACTCAGCCGTATCAGGTAAATCCTT}\\ {\tt TAAATCCTT}\\$ 

 $\label{thm:control} \mbox{GGGATGTTGGCATCTGGGAACCTCACCACAGAGAAGCAGATGGACCTGGGGCTGAAGCAGCCAAGAGACCTCTGCTTCTGCATCCAGAGTGTTTTGTGGCCAAGTGAGTCTCTAATTCACAATGTCAAATGAGCTTG$ 

 ${\tt AATGGAAAATACGGCCTCCCTTCCCCCCTTCCTGTTCCTCCCCACTTACTCCCTTCATTCCTGCTGCTCCTCAAGCCATGGGTGAATAGTTTCTCAGTCTCTTTGCCTTGCTGAGCTGGGTTAGTTGGGTTAGCAGGATGGACATCT}$ 

 $\label{total} TCACTATCTCTTTGCCTCAGATTCTTGGAACAGGCTCAGACAGGTCTCGCTGCCACGGTCTTGCCCCCT\\ GTGCCCTCCTGCCCCACTCTTAACACGTGATATGGCCTTTGGATAAAGTCTAGACTCCTGAGCATGGGA\\ GACCCACAA$ 

 ${\tt TCAAGGTATGCATGTGTGCAGGGTGTCAGGAAATGAAGACATTCGCATATGTCCACAGGCATAGAGGTCTGAGTCCCACCAGCTGTGTACCCCAGAGCCTGTAGTTCTGAGGAATAGCCCTGGGCAACAAGGACCAACACATTCT}$ 

 ${\tt TAGGAAAGAACAGCCAATGAGAAATAAGCAACCTAACACATTCACACAGTGTTGCCTCTTCAGCTAGCAGAGGTGGAGCTGGGAGGAGATTTTCGCCAATTGTTTTGGAAAACAGATGCAGAGGCAAGTGTACCCCTGTGAAGCAAT$ 

 $\tt CTCAGGTCTTCTGTGCATCTCAGCTGGATTTCCAACCAGCTCCCAATGGGACTTCTTGTCCTGCCTCCCAAGTGTCTCCAGAGTGCTGGTTCTAAACTACAAATGGGATCACACCAGTTCCTGCTCAGAAAACATGAATTGGTCCTC$ 

 $\label{total} TGAAGTGCAGCACTGGGCCCTCAGCATCCCATCAAATGTGACACACTGTGAACAATGTGGATCTTGTG\\ GGCTGCAGCCCTGGTGGCTGAGGGAAGTGCTCTCTGGATGCTGCATATGGAACCACTGTGTTCTCAGTG\\ TGTAGATTC\\$ 

A GAGATGAGACAGGGGTTTTGACAGGAAGGGCCTCACTGGGTGGCAGGATGGAGGTGAGATCCCTGTGCTGATGAACAGGTTATGTTGTGTTCATGCGACAGAATCAGACACATGCTCATTTTGCAGGTTGTGCAGAGAGGCCTG

 ${\tt GGGTATGTGAAACTGTACAGGTCTTCATTAGTGATGATGAGGAACATAGGTCTTAGTCCAAGTACACCAGAAAAGTGGGAGAGTTGGAAACTGAAAGACATGTTAAGAGATCACTTTGGTGTCTATGTAGCTAACAGAGTGTAGGAA$ 

 $\label{thm:control} \begin{tabular}{ll} GCTTCTAGATTCCATCCTCTTCTGCTCTGCTCTGCCCTGGAGGCTGATCTGCATGGCAGCAGCATCACCGGA\\ GCTTCTTTGCACTCTGGACTCCAGTGGATTCAGCCAATGAGGGGCACTGGCAGGAGGACACAGAG\\ AGGAGAGAA\\ \end{tabular}$ 

 $\label{eq:cctggggttaaaggttttgaaaactactgcaaaggtcactttagccacagtgcttctacagggcaatgagccagtatatgcatgatgcatcatacttaatcgaggcagtatatgcatgagcagtttctcaaaatatcatcccagtc} \\$ 

TGACGGGCGGGCCGGACGGCCGGCCGGTGCCGGCCGGGACGCCGGGCCCGCCAGCCTAGCTCGCCAT CTCGCTCACGCCGCCCGCCGCGGGCCGTCAGCCCCCCGCCGGGCCGGGCCATGCAGGAGCCAGAC CAAGAGCAT

 $\label{eq:condition} \textbf{GCTAAGACCCCAGTCCAGGTATGAGGGATTCCAAACTGCCTTTCCTACCGTCTGTCCATTTGCTCCCTTTCACCGCAGGACCCAGTTTACAAGGGGCAATTAGAAACCTAAGAGTAAGGCCCTTGAGCTCCCCTTTCAGAACCTGAG$ 

AGTCCAACAAACCAGACACTGGGACTGAACCTATTAGTGGTACTTGACATATAACATGGGTCTTAGATT GTGTTCTCCAGAAGCAAACCGTGAGACCAGGGTACATGTGCAAATGATTTATTAAGTGGGTGTTCCCAG AAGAAACTG

 ${\tt TAGACATGCCCACCACCTCTTTTCCTAACACACTGGGCAGTCTTGGCCTCTCCCAGGCTCCCCTGGGAGGGTCACTACTTTCACAAAGATGATGCCCACTTCTGCCCATGGAATCTGGCTTGCCCAGTGACTACCTGACA$ 

 ${\tt GGAACCCACAGTTGGAAACCCAGGGCAAAATCTAAGGCAGCCTGCACAGGCATTTGGAAGTCACGAGATCTGCTCTGCTCCTGATGAACTGTTTGGGGCTCAGGACAGGACACAGCAACGCGTGGGCTGGGGGGAGACGGAACCCAA}$ 

 ${\tt GATGATGGGTCTAACAGACAGGTGCTGTGAGAAGTCAGACTCTCAAATCAGACAGTGATTCAGGGCACAGCTGCCAAGCATCAGACAGCATCTCACACCGCTTGGTGGCCATCTGCCAGGCATCGATAACTTGATAAGCTGGGT$ 

 ${\tt CATGTATCCATTCATCTAACATTAGTGACATGTCCCAAGCCCTCTGCCAGGCTCTGTGATGCACACCTGATAAAAGCCCAGAGCAGTAGGAGGGTGCACAAGCTTAATAATGTGTTATGGGAAGTATACATAGAAATATGCACAGG$ 

GGACAAGAGTCAACAGCATACCAAGGACAGGGCTAGAGAGATGCCCTGGACACAGAGATGCTCCTGTGA CCAAGGACAGGTGCCCATTTGGGGAGCAGAGCCCACAACCTGCACCCCGCCCCCGCATCATTCTCCTGC AAATGTCCA

 $\label{eq:ggaaacagatgctcccagctgccatcagccagcctactgaatgttttcagccctggctcct} \\ \text{TCTGGACCAATCGAGCTGTATAAACACATTTTATCCGCAAGCCTGGTTGTGGGGGCCAACCTATCT} \\ \text{GTCTTCTTT} \\$ 

 $\label{total} TCACAGTTCTGGAGGCAAGAATGTAAAGATCAAGGTATTGGCAGGTTTTGCTTTACCTGGGCCTTGTAGATGGTTTGCCTTCTTGCCATATCCTCACATGGTCTTTCCTCCATTTTTGCGTCCCTGGTGTCTCTCCCCTGCCTTTAAG$ 

 $\label{thm:condition} {\tt GTGGCCACCTGGGCACCCTACCCAGAAGGAGTTTATGCTCTAGCAAAAGAGGCGGGCATGTACAGAGTTTGGTCAGCCATGTGCCAAGGCAGATTGTGATAAAATCAAGAGCTGAGAATAGAGTATTAACTCTCACTGGGGTAC$ 

 $\label{totalatt} TTTCAATAATCACTTCCTCCTCAACTCTGGGGTCCTTCTCAACTGTACAATTCCTATGTTTATCAGGAC\\ AGCTAAGCTCAAAGCAGTCACTGAAAAATAGCACAAGGACCTAATACCCAAACCTAGAGGTTGCAGGGC\\ AGAAGTGGA$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGTGAGCCACTGTGGGCCACCAGGGTGAAT\\ GAGCTATTTTTGGGTGTTTAACTGCTGAGGAGGGATATGACATGTGGGCACTGTGTTTACATCAAGTCA\\ CTGGTTCTC\\ \end{minipage}$ 

 $\label{eq:constraint} \textbf{AACTGTGTCCTGAGCTCTGAGCACTCCCAAAGGCTGATCCAGCTGCTGCAGCCCAAATGCCATGATGGCTAAGGATCCAGTCTCCTCCTAGCTCCAGCCCAGAGTCTTAATC$ 

 $\label{thm:condition} \begin{tabular}{l} GGGGAAAACGGAAGGTTCTGGCAAAAAAAAGGGTTAGTAGGGGGAAGGGTACACAGC \\ TGCACATCAACCCTGGGCTCCTGGCATGGGTTCTGGCTGCAAAAAGTACTCAAGGATGTCCCCCTTCTC \\ TTTTAGTTG \end{tabular}$ 

 ${\tt TAGAATCACTGCAAAAAAGAAAACAAGACTATGCTGCATTCAAGGAGCTGCAAGCGGTCCAGTACAGTGGGGATGTGGGCACGGATGGAGGAGAGACAAGATGAAGGAGCCAGAGAATGAAAGGAGCAAGATCTGCAAAGATCCCTCT}$ 

 $\tt CTGCCTCCCCTCAAAATGATCAGATTCTACTCTACTTCCGTTCAAAGGTACAAGGTAACAAATATACTG$   $\tt ACATTTGCTCTTGAAGGGAAGAAAATCAGATTTCTGCCAATTTAAAGCCATGAACAAATGTCAGAATTA$   $\tt AGATCAGTT$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGCAGGAATGACGGCAGGAAGAACTGTTC CCACTTGCCCCTCAAAATGCCCGAATCTCCCACCTTCCGTGAACTCTGGAGAACCTTCCCACTGTGACCTTCCTCCTT\\ \begin{minipage}{0.5\textwidth} TTCCTCCTT\\ \begin{minipage}{0.5\textwidth} TTCCTCTT\\ \begin{minipage}{0.5\textwidth} TTCCTTT\\ \begin{minipage}{0.5\textwidth} TTCCTTT\\ \begin{minipage}{0.5\textwidth} TTCCTTT\\ \begin{minipage}{0.5\textwidth} TTCCTTT\\ \begin{minipage}{0.5\textwidth} TTCTTT\\ \begin{minipage}{0.5\textwidth} TTCTTT\\ \begin{minipage}{0.5\textwidth} TTCTTT\\ \begin{minipage}{0.5\textwidth} TTCTTT\\ \begin{minipage}{0.5\textwidth} TTCTTT\\ \begin{minipage}{0.$ 

 $\label{eq:condition} \mbox{AGGACAGCAAATTAGGAAAAACCGCAGATACAGCAGATAAGGGAGGAGAGGGTGGATTATCTACCT} \\ \mbox{CAGTGACAATTTACATGCTGAATTATACTAATTTCCCTGTGTTCTGTGATGCTCAGTAAATGAGACTCT} \\ \mbox{GCTGATGTT} \\ \mbox{GCTGATGTT} \\$ 

 $\label{thm:control} \textbf{GACCTCCATTCACGTAGAGGAGCCAGGGGGCCCACAGAGAAAGCTCTCATCCACTGTCATTGGGCTTCCTCGGGGGCCACGGTGAACCCAGGGGAGGCCTTGCAGGGGAGTAAGAGCGAAGAACTCAGAAATCAGGCTGGGAC$ 

 $\tt CTGACACCAGGTCCCACACATCATCACCTTGGACCAATGGAGCCATTTCAGCAAAGGCATTGTGAAGTGGCACATGGTTGTGAGATCCACTGGTTTTACTATGTATCACACCATCCAGAAGCTGCCAGCCTGGTAGAATGATGGGA$ 

 $\tt CCCATACAACCCCTCTGCTCTTCACTTCAGTATTCAAGAAACTGCAAGAGATATTCAACACTTCACCAT\\ AAAATAGGCTTTGTGTTAGATGCTTTTGCCTAACTACAGGCTAATGTAAGGGTTCTGAGCACATGTGAGGTAGGGGGG\\ GTAGGCGGG\\$ 

 ${\tt ATAATCTTTTAGAAGTAACAAAATGATCTACACATGAAAATACTCAATTCAGCTTCACATATTGCCACATGTTATGTTCCCTGAGAAGCAGACTCTGAGAGTTTAGCATGTAGATGTTTTAAGTGGTTTCCGTGGGGTCAACAGCTA$ 

 ${\tt CACGTATCATTGTGCAGTCACTGCATCCTAGTTCACCTTCTCTGGGGCAGGAATGGGTCCCTAAGATGTGGGCTGGAGAGCTCTGGACATCCCCAAGGGTTTTCTGGGAGTCACGGAGGTCAGATCAGCTTATCTTCTTAGAATTA}$ 

 $\label{totalaction} TCTGAATTGTTCAAACTGTAGAATATGTAAGCACTGCTGAGTCCTCATGTCTCGTGTTAGGCTTGGAT\\ TTTCCGTTAGCCTGTCTGTGAATGCTATAACGAATTATCTCAGCTTTCTACCAGTGACTTTGTGGGTAT\\ TGCAGAGTG$ 

 $\label{thm:condition} TTACTAGGGAATGTCGAAGTGTGTAGAGACAGGAGAGGCAGCACTCAGATTCTTGGGCTAGACTGCT\\ CAGGTTTGACTCCCTAATTGGCTGCATGCTATGTGACCTTGAGCAAGGTACTTAACTTCTCCATG\\ CCTTCGTTT\\$ 

GCACTGATGTCACTGTGCTCCTGGGTTAATGTCGTGGTGGGTAGAATGACCGGCATAGACCGAGCAGCCCAAGCACGTTGTGCTTTCCACGGACGAGATCGTGCCCTACGACCACCTCATCCTCTGCACCGGGCAGCAGTACCAGGTA

 $\label{totalg} {\tt TTGTAGGCAGAGCTTTCTATGCCAGAGGTGTCAGGGATCTGGGTTGCTATTGGGGTTCTTGTTTTG} \\ {\tt ATGCCAATAAGCATCTTCACCGGAAAGAACCTTCTAGATGTCACCAAAATCTTTACACAGGCTCAAAGACAGGGGTC} \\ {\tt CAAGGAGTC} \\$ 

 $\label{eq:condition} \textbf{GCTCTAAGTCTTTATGGAGTTTACAGCCTTGTGCCTGCTTGAAATGAGTTCTATTTGTACCATGCCTTT\\ \textbf{GGGCAGCCTGTAGACAAGGGACATTTTCTTTATTCACTCCCATAAAGCCCTGGCAGTCTCCTCCAA\\ \textbf{AGTACCACT} \\$ 

 $\label{totacconstraint} TCACCAAGCTCCTCTCCCATTTGTACCCCATGTGCCTCTGCCCAAAGCACACTCCCTATAGCCTT\\ GCATGCCATTCTTGCCCTCTCATCTTTCAAGAGCTGTCTTTGGTCATCCTGTAGTTGGTGCTAAG\\ TTTGCCAGG\\$ 

 $\label{eq:condition} \textbf{ATTTCCTCACTCCAAAAAGAAGCCTCTCCCTCTCAGCTGTATCTCCAGTCCCTAGAATGGTACTGAGT\\ \textbf{CCTGTGGGTACTCGGTGATTTTGCAGCTACTGCTGCAGGGAAGGGGAAACTGCATGGGAAGGCATC\\ \textbf{TCCTAAACA} \\ \\ \end{tabular}$ 

 $\label{thm:condition} \begin{tabular}{ll} GCCAGCCCCAAAGCCTGACAGCCATCCCTTCCTTGGACGTTGCTAGGGACGGGAACAAAGGA\\ TATGGAACCCCAGCTCATGTAGGAGACATGTGGCCCCAACACATCACCTTTACCACGACTCAGCCACTG\\ CCATGGTGT\\ \end{tabular}$ 

 $\label{eq:constraint} ACTCTAGAAAAGAAGCAGAGTTGAGAGATGAAGATGTGAGTCTTCATTTAACGAGGGGTCAAACCTTGGTTCCCAAAGACTGTCCAAACTGTCTATAATGAAGAGACAGATTACTCCCAACTCCAATTCAGCTCAAACCAA$ 

 $\label{total} TTTTCACCTCTCACATAACAAAAAGTCTGGAGGTAAGTGGCTAATGAACCATGGCTCATGGACTCAAGGATATCTGGCATGGAAGTTAGAGTCTCTGAGATGGCCTTCCTCTTCCCAGGTTTGAGTATAAGATGTTAGCCACAGCTC$ 

 $\label{thm:condition} TTTAGTGAAGTGCTTTTCCTCCTCTCCAGTCTTGGCATTTGCTGTCACTCTGCCCATGAGGCTCTGTTC\\ TGGCCCAGCAGGCTTCTTCAGGCAAACCTAAACAAACATAATGTTCACCTGGAGGACTTCTGGTAAATT\\ CAACTCTCT\\$ 

 $\label{eq:total} \textbf{ATTAGAAACAGATTAGCATGATTTTAGGCTCGAAGCCCCAAGAGGGTATGGGCCATTGTGTCAACCTCATGTGCCTGTCACAGCAAAGACAGTTGGTCACATCGGTTGAAAGAATGGGGCCCACTTAGGCTAGACACTACAGGGGCCC$ 

 $\label{eq:condition} \textbf{AAGTGCTCTACAAGGGAATCAAGATGTCCACTGGAAGGTTTCAGAGCAGTCCTTGCAAACAGAGCCAACTGAGAATAGGAGTGTTTATTCTGTTTAAAGATCAGCTCTCAAAGGTGAGGAGTGGTATTTTCTTGGTATAGTCCC$ 

 $AGAAAACAAGGTAAAGCTGAGGCTGGGGATGGGGGTTGAGGAAAGGGAAGGGGCCTACAAGTAAATGTT\\ TACAAAATGCCCACTGAGTGTCAATTCTGGGCAAGGCACATTGCATGAGTCACCACCTTCAATTTTCAC\\ AGCATCATG\\$ 

 ${\tt TCACAAGGGACTCACGTGCAACCATCGGCGATGCCTTCCCCACCTCTCAGGCTGCAACCTGGCCAGGCGGCTCTTTTCACGTGACTTTGCCCTTGATATGCTTGTTCATCTGAGTCCATATGTTACCTGTTTAGCAGTGGG$ 

GACACCAAGCTCTTGTTGGCTTTCTTCCCCAGTCGGCCTTTCCTCCCAAACTCCCTGCATCAGATGTGG CTTCTCTGGGATCCCTGTCATTGGCTGTGGAACCTCAGAATCACCTCTGATACGTAGTTTGGCTTTGGT GACAGACAG

 $\label{thm:condition} \textbf{TGTGGCAGGAGCTCTACTCACTCACTCAGCTCTAAGTCTCTAGTGCCAGACACATCACAAGCTGCATGAAAT\\ \textbf{ATATGTTGGGTGGAATGCTTGATGGTTGGGCAGATGGACACTTGGATAGGTGAACAAATGAATTGATGA\\ \textbf{TATGTGATC} \\$ 

 ${\tt TATGGCCTGGCCCACAATATGTGCTCATTAAATCCTAGTTGTTGTTATCAGTTCCTGTGTATAGCATAACTTCAGTAGCCTAGTAGGATAACTGTGTTAGGATGGCCCACTGAAAAGCAGACGTCAAGATTGAGTTCAACATTCAACATTCAGTAGAAAAGCAGACGTCAAGATTGAGTTCAACATTCAACATTCAGTAGAAAAGCAGACGTCAAGATTGAGTTCAACATTCAACATTCAGTTGTTAGAAAAGCAGACGTCAAGATTGAGTTCAACATTCAGTTGTTAGGATGGCCCACTGAAAAGCAGACGTCAAGATTGAGTTCAACATTCAGTTGTTAGGATGGCCCACTGAAAAAGCAGACGTCAAGATTGAGTTCAACATTCAGTTGTTATCAGTTTGTTATCAGTTTATCAGTTTATAGCATTGAGTTGTTAGTTGTTGTTTATCAGTTTCAGTTTATCAGTTTATAGCATTGAGATTGAGTTCAGTTGTTAGGATGGCCCACTGAAAAAGCAGACGTCAAGATTGAGTTCAGTTCAGTTGTTAGGATGGCCCACTGAAAAAGCAGACGTCAAGATTGAGTTCAGTTGTTAGGATGGCCCACTGAAAAAGCAGACGTCAAGATTGAGTTCAGTTCAGTTGTTAGGATGGCCCACTGAAAAAGCAGACGTCAAGATTGAGTTCAGTTCAGTTAGTAGAAAAGCAGACGTCAAGATTGAGTTCAGATTGAGTTCAGTTGTTAGGATGGCCCACTGAAAAAGCAGACGTCAAGATTGAGTTCAGATGAGATTGAGTTCAGTTGTTAGGATGGCCCACTGAAAAAGCAGACGTCAAGATTGAGTTCAGATGAGTTCAGATTGAGTTCAGATTGAGTTCAGATTGAGATTGAGATTGAGTTCAGATTGAGTTCAGATTGAGTTCAGATTGAGATTGAGATTGAGATTGAGTTCAGATTGAGAATTGAGATTG$ 

 $\label{totalcott} \textbf{TGTACCCTTCCACAATAGTACAGCCTCCTAAGAGCTAACCTCATCATATCCACATATCCATCATACATTT \\ \textbf{TTCAATGTAGTTAATTTATATTTACACTTTGATATAAGATCTAAATTTGGTCCCTGAGGGCACTCATGT \\ \textbf{AATATCTCT} \\$ 

 ${\tt TGAGTATGAGTATGTACACAGATATTGCATCAACTTGGAGAAATGTGAACGTGTTGGACTAACTTGCCT}\\ {\tt GGTTCTTTGTGACTGATGTGCCCAGAGGATCACAGTGATGCGAGGAGAAGTATCTTTGGTGGTCTGCAGATGTGTTTG}\\ {\tt ATGTGTTTG}\\$ 

 $\label{thm:control} \textbf{TGTGCATCAGACCACTTGGAAATAGGACGATACCTTAAAACTAATCACAGTAGCTTAACATTTCAGGGCTTACTATGTCCCAAGTACTGTGTTATGTAAGATAGGTACTATTTCATCTCCAAGTTGCTGATGAGGACCTTAAGACAA$ 

 ${\tt GAGGAGGATACTGCACTAGTCCAGGCAAGAGACATTGATGACTTGGGCCAGGGTGATACCAGAGGAGATGGAGAGAAACAGTTGATTCTGGATATGCTCTAAAGATGGAGCCAGCAGGATTTGCAGAGGATCTAGGGGTGAAATAGA$ 

 $\tt CCACTAAGCATCCCACACTGCAAAGGACAGCCCCTCTCTCCACCACAAAGAATTATCCAGCTCAAATGCCAGTGGTGCTGAGGCCCAAGAAACCCTGCTATAGACATATGGATGTGTAGCTCTGTGATAATTACATAATCAGGTTCAT$ 

 ${\tt GGACAGTTGCCTCCTAGCGTGAAATTACAGTCAATGACCCAGAGGCAAGAGGGTCCCCATATCATCACCAGAGGCCCTGAGACTCTCAATCTCTGTAGGGATGAATGTGGAATTTTTCTGTTGCTTCTGTGTTTCCGTAACTGTTT$ 

 ${\tt TAGCCTCCCTTAACCGTGCTCGGAACACTTGCAGGATCATCAAACACAAAGCCGATTTGATAGTAACATGTTGAGTGTCTTGTGCAATTTATTGAACGCTGCACTGAAAGTGGGAAACAGACGGCTGTGTGGGTGCCGAGGATGGTT$ 

 $\label{totact} TTTAACTGTTTTCCTCTATGGGCTGCTTAGCTCTACAGATATACACCAGGAGTCTTCAATCTAAGCTAA\\ CTGGGAAGGGGAACAGGGAACAGGGAACAGGGAGAACAGGGTCTGATGAAACTCACCTTCCCATCAT\\ TTGGCAGCC\\$ 

AGCAAACTAACCCACTATTATTTATATACCCATTGCAGCCTTGTGGCTTCCAGTCTTCTGGGAAATATA GGCCAGGCCTTACCCATTTCTGTATGCCCAGGATCCAACACCGTGCCAGGCACACAAAGACTCTCAGTA AATAATGAG

 $\label{eq:condition} \textbf{ACACTCAGCCCTTCCCTGTGACGCAATCATCCCGGGTCATTGCCAAGTGGTGGGAACGTTTATGAGGAAAGTCTTCCGTGTTGAGTTAAACAATGAAGAAAGTACTAGGATTGGATTCTGCCCAAAACGAAGATGCTTCATGC$ 

 $\label{thm:condition} \textbf{GGAGCTGCCAAGTCATATTGCAAAGGTCAAGATATAGAGAGTGGTGAAAGATTGCAGCCAGTTCTGCCAAAATCTTTCATTCCTTGCATATTATCAAGTACCTGCCAGGGCACAGCTT$ 

 $\label{thm:condition} \textbf{GAGTCTTAGCACGTGTACACACCACGCATGTGCATTCCTACCTCTGAGTGTGTCTGCCTGAGTGTTTATGGCTGCATAGGGGTCTTGAGTCTGCCCAACAGTTAAACAGTGGTTTACTTAGCCCTCCCCAACTGTGTGAATGCAAG$ 

 $\tt CTCGAATGGAATGGACTTGAACGCAATGGACTGGAATGGAATGGAATCTAACGGAAAGGAATCGAACGGAATGGAATTGAAT$ 

 $\label{thm:condition} $\operatorname{GGCGGGAAAACTGCAGGGGGGCCTAGGGGAAGGCATCTCTTGCCTAGCAGATGCTGACAGAGGAATTGGCACATTCTGCCCATGCATCTTGTCCTCATGATTCACATGCCAGCAATTCCTCAGGCTAGAACATACCTTGTAGG$ 

 ${\tt TAGGCCTTCTGGTGAACTATCACACAAGATTTGTCCCAAGCACTCTTCTGACCTCGGTTCTCTGTAACATGAACAACTCACCCAACACTTGTCAGCTCTGCTCATAGACTGGGCTGAGGGAATGTGTACATTTCACCACCATGTCCT$ 

 $\label{thm:control} {\tt GTATGCATCTACGTGGCCAAAGGTACTACATGAACACATGGGTTCAGAGTCAGCCCATTCCACATGCATCTGCAACTCTTCGTCAGGCCCCAGAATGCAGCAGGAGTTTGATACCTGCCATGGGGGCATAAGGAGCAGCAGGCATTG$ 

 ${\tt CAGGCGTGCACCACCACCTGGCTACGTTTCTGTATTTTTAGTAGAGATGGGTTTCACCATGTTGGCC} \\ {\tt AGGTGGCCAGGCCGGTCTTGAACTCCTGACCTCAAGTGATCCGCCCACTTTAATGAATACTTTAAAGCATTAAAACAA} \\ {\tt TTAAAACAA} \\$ 

 $\label{thm:condition} TTAGCCTCCAGCCCACCCTCTAATTAACCCGTCCCTTTATCCTTAGCTGAGCCTGAGCTTCTCTCTTTATCGCCAGACCTGGGTCACATGTTTGTCTCTGAGCCAATCGCTGGCTAGAGAAATGGGATGTGCTGACTGGCTTAGC$ 

 $\label{thm:condition} \begin{tabular}{ll} TGAGGAGACAAGGAGGCCAGGACACTGAGGACCCTAGGAGGAGACAGTTAGCAGGTGGTAAGAAAGGAGGTGTATCCTGGCCTCAGGATCTTGAAAGCAAAGGGAATGATGGGCATCAGGAGCTGG\\ \end{tabular}$ 

 $\label{eq:GAGAATCTTAGAGATCTCAACATAAGGTCAGGACGATTTCATGGGGCTCATGGTGTCCTATGTTTACAAGCCACAGGCACCTTTCCCACATGCTCCCTTTCCTGATGTCACTTAGTTGATACATCATTAGGGCTGGAAGAGAT$ 

 $\label{thm:condition} \textbf{ATCTCTGATGTCCTCACTAGAGCCCACTCTGATCCTCATGAATCAGATACCACCTTAATGACACCAGGTCTATGTCACACTTGCCAGATACCATCGCACATTGACCCAAGATCTGTTGTTCAGAGTTACTGCCTTAACAGTG$ 

 ${\tt CCTATTTGTACATATGCTTATTCAATCCTCCTACCCCCACACAATGTAAGCTCCATGAATGCAGGGGGCTCACTTTATCTTGTTCTCCTGTGTTCCCAGCGCCACGAACAGTACCTGGTAGGCATTCAGTAAGTGTTATGTTGAT$ 

 ${\tt CCATAACCAACCGTATGAGATTTGCACTATTATCCCCATTTTACAGGTGTGGAAACTGAGTCTTGAGCCAGGGGGTAGAAAAGCTGTGCCTCTGAACCCAGGCCGTCTAGCTACAGAACCCACATCTTCACTGCTACATTCACATTTGC$ 

 $\label{total} TCCAGTTTGGATCTTAAGAGTTCCAGAGACAACCACGTCTGTACACCCACAGGATGGTGAGAGCTGTTA\\ TTATTACTGTCACGCAGCAAGGACAAATAACATTCTCATAATGTTCACTGCGTGCCTGGCTCTATTTCG\\ GGATTTACA\\$ 

ACTGGAGCAAGCACCTACTATGTGCCAGGCATTGTGCAATCTGCTTTAACAACAGTTGAAGCAGACTTTGTCCCTGACCTTAAGGAGACCATAGCTTAGTGGGGACATAAAAAAGTAACCAATCACAAGCCTGCACTGTATGAACAG

 ${\tt GAGACCATCTCTCCTACCCCATGGCACAGCCTGTTGCTGAGGAAGGGGGGTCCCACCACAGGGTTGCTTGGCCCTTCTCTGTGAATAAGAATTTGGTAGGACAGAAAGCATATCACATCCACCTCACTGGGTGCACAACCCTCTCCCTA}$ 

 ${\tt TGACCTGAAGCATCCTCCAACATTTGTCAACTGCATGCTCATGCTGTTCTGGCACTGGCTGTGCAGCTCATAAGTGTCAGCTTCATATGAGGGTAAACCAAGTGCTCATCCCCTCTGACAGGCACAACAAAAGATGCTCCCCT}$ 

 $\label{eq:condition} \textbf{AGGGCGAGTCCTCCCTGCTGCTCCATCTGCCCCAGAAGTCACACCTCAGCCTAGATTAGCTGAGGGTCACTCAAACGCACTGTAGTCTGTAATGCCCTTCATGCCCTTATCTTTGTATGCAGGTGAAGCATAGACCACCTTACCTTACCCTTACCTTACCTACCTACCTTACCTACCTACCTACCTTACCTACCTACCTACCACACACACACACACACACACACACACACACA$ 

 $\label{thm:control} \textbf{TGACCTTAGCAGAGCACCTTCTTACCATTGGTGATTGTCACTACTGCTAGACTGCGTGCACCGTGGAGGCCCGGGAATGGGGACTCTCTTGGTCTCCATGGTATCCGCAACACCTAGCACAAGGTGTAGCACACAGAAGATGCTCAAC$ 

AAACCCTAGTCACTTCTTGTCATAGCAGTATGACTTCAGTCATATTGCTGTACCTCTCTAGGCTTCTTC
ATCCATGTAATGGGTACAGGGATGCCAACCTCATAAGATCCAAGTAGAGTCTAAGAGATAATACAGGGA
AAGCACTAA

 ${\tt TACATTTATTCATCAGACATTTATTGGGTGATGATAGCTCAATAAAGTAAACATAGCAGGTTCAAATTTGATGCAACCTGGCCACTGGGTACTGGGTGCTTAGAGCTCAGAGTGGAGAAATAATGAACTGTTCACTATTATTCCAAT$ 

 $\label{thm:condition} TTCCTACGCTTTTGGTTATCCTCTACAGCAAAGAACCCAGCCTCTGGAGAAGCAGTAAGTCCCAGCCCATTCCCAGGCTCTTCTGCCCCCTGGGCACACCTGGTACCAGGCATGGACAGGCCCAAACACCGAGGCCATTGCACATT$ 

 $\label{thm:condition} \textbf{GGTGCTGCAGTGGTTGGACTGGTTTTTTTAGTGGGTAACAGTGCTCCTGGAGGGGAGGAGCATGGCTTA\\ \textbf{CCTTGGTTTTGAGCCATGATCTCTGCCACAAGCTGCTTGGCCAGCCCCTGCCCTTTCCTGGAGCTCAGG\\ \textbf{TGCACACTC} \\ \\ \end{tabular}$ 

 ${\tt TACAAACTTGATGTATTTTGGGACCACGTACTACACAACCATGTCCACAGAAGGAAATGTGTGGTCGAACCACCTCCATTCCTTTTGGCTTAATGTGTTTCCTGTGGGACAGGAAAGCTACTCGACAAGGGAACCCACAAAAATA}$ 

 $\tt CTGCATAGCCGCTCCCACGACGAGAGAGACCTCCCCTACCCGCAGCCCTGAGGCTGAATCTGGGTGCTCAGTGCCCACCCTGGATCTCCTGAGGGTATCTGTGAAGCTGAACATCCCAGTGTGAACGTTGGAGGCGCCCTTAAGA$ 

 ${\tt CTATGTACAAGCTCTGCCCCAGGCGTGGGGGATACATCTGTGAATAAGACAAATGCAGCCTGTGCCTTCTAGGGCTCAAGTCTAGTGGAGGAAGGCAGACACATAAGCAATTACCATCAGAGCTCCAACCCACACAAACATTTTTAA}$ 

 $\label{total} TTTGCACACTGATGATGAGGGCTCCACAGAACATGTTGCGATGGTGGAAAAGTATTTTCAATGGCTTAGAGGGGCTCCTGCACATGGAAGGATGAGAAATGAGATGACTCATAAGGAGCCAACTCTCAAGTCTTAAAACCCAACTTCA$ 

 $\label{thm:constraint} TTCTTTCCTCTTGTATTCCACATTTTAACTGACATTAGGGCACCAAGTGCAAAAATCTGCAAACAGTTAGCTTTCCTGTTTGAGCATTCTGGTCAGATTATGCTGAAGTTAAAGTTCTTGTAGCACGGAAGGATCACCCTCTGTACA$ 

 $\label{thm:condition} {\tt GTTGTTCTCAAGACCTACATTTGGAACCAACGTTCACTTCCTGATCCTAGGTCAGAGAAAGCCAAAGCCAAAGCCCAGATGCTGGACAAGGAGTTGGGAAATTACATCTTCAGCGTTGGTCCTAGAGGTCTGGGGAAAT$ 

 $\label{totagct} {\tt TCTGGGTGTTGGCTGATCTAGTATGTACTCAGCCGGAGTGAAGTGGGTGTCCCAGCCT} \\ {\tt GTTCCATAGCTCTCATTCTCCAGGAGACTAGCTCAGGCATATTCTCATAACACTGATGTAAGAGCAAGAGAGCAACCA} \\ {\tt GAGGAACCA} \\$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGGTCCCTAAGGGCACCTACTGAGCATACAGTAGGTGATCAGGTCCCTAAGGGCCCCCAGAGGTCATATGTACCTATAGTTAAGAGCATCTCTGTAGAGTTGGACTGCTGGGGTCAGTTCCCTATAGTTCCCTATAGTTCCCTAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCCCTAGGGTCAGTTCCCTAGGGTCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCCTAGGGTCAGTTCCAGTTCCCTAGGGTCAGTTCCAGTTCCCTAGGGTCAGTTCCAGTTCCCTAGGGTCAGTTCCAGTTCCCTAGGGTCAGTTCCAGTTCCCTAGGGTCAGTTCCAGTTCCAGTTCCCTAGGGTCAGTTCAGTTCAGTT$ 

 $\label{total} TTCAATGCACAGTGGTGAACCATTCTTTTGATACAGCATTTTTTGAAACACTCTTTTTTGTAGAATCTGGA\\ AGTGGCCATTTGGAACGCTTTGAGGCTTGTCTTTTTGAAAAGGAAATATCTTCAGATAAAACTACACAGA\\ AGAATTCTC\\$ 

 $\label{eq:condition} \mbox{AGGGCGTATCCAAAACTTGCATATGGATCCCCTTTGGTTTCCTGCTAAAATGCAGAAACTGACTCAGT AGGGCTGGGTATGGAGTTTCTGCATTTCTACCAAGCTCCCAGGGGGTGTCAAGCTGCTAGTCTGTGAACTGCACTTT$ 

 ${\tt TGACTAACACACTTTGCTCAATTTCCACTATCCCCACTAGGTGACCACAGCAAAAGTGGACAGATAGC} \\ {\tt GTCTGGCAAGCTTCAGGCAGGAGCTTGAACCTGACCATCTTCAGCTGTCCCAGCTGTCACCTCCAGAAA} \\ {\tt TCTGAGATC} \\$ 

A GACTTTGAAAGAGCATGGCAGGGAATGCAGTGCAGCAGGGCCTCGGGAAGGCAATGAGGATCGGAACACTTTGATGCAGGAAGACTCTGTGCCTCTCAGGCAACACATCTGCTCCTTCATGCAGCTCTGTCCCCCTCTCCCCAC

 $\label{eq:control} \textbf{GTTTGAAACAGTCTTTCTGTAGAATCTGCAAGTGGATATTTGGAGCGATTTGAAGCCTTCATTTGAAACGGGATATCTTCACTTAAAAACTAGAATGAAGCATTCTCAGAAACTTCTTTGTGACGTGTGCATTCAATTCACAGAGTT$ 

A GAAGTCACAGTTATCAAAGCAGTTTTGGAGGTGGTGGCATGTTCCTGCTGTCTGCAGGGTGCTGTTGTCTGGGGGTGTCCTGTGAGTGCCCTGAAATGTCATACAGTCTACACCTGGCGGGTGGCACCTCTGCCCACTG

 $\tt CTTTCAAACCTCAGGCAGTGTCACATTTGCTACTCTCCCATTGGCCAAAACGAGCCACGTGTCCAAGCCCAGATTCAAAGGGTAGAGAAATAGACTCTACCTCTTCATGGGAAAATGTACAGTGTTGCATTGCAAGGGTATGGACAG$ 

 $\label{thm:condition} TTGAGAATCTGTAGGATACCTCCCAGGTAACTCTCCCAGATATCCCAACCACAGACAAGAAAATGAACTCATGATAACTGGGCACCACTCAGTGCCCTGGTGCTCTGTTGTTGATATCTCACTGAAGCCATGCAACAACCATGCAACAACCTTGCT$ 

 ${\tt TAACTGAACACCTTTGTGCATGAGTCTGCTGTCAATCATGTTAGCTCTCCAGGCATCACCGTAGTAGTCCAGTAGCCTGCACTAGCTGGGAAAGCCACTGACGAGGACTCTGGAGTTAGAGAGCTTTTGCATATTGATAGAGAACTC}$ 

 $\label{eq:compact} \textbf{ACCAAACACAAATGGTCACTACTCCATTATTCCACTCATATGAAATCCCCACAATAGATAAAGTAATAGACACAAAGAAGAAGATTGGCCAGGAAATTAATGGGGGAAGAACATACAAGTGGCTGCTTAGTGCATATGGGCT$ 

 ${\tt AACTGAGACTCACAGCACACCCTCCTATCTGGAGACATGTGGACCTGGAGGGCTGGAGGAACTCAGATGCCTTGGTCCTTAGGAGGATCCAGAACCACCGCACTGAGGCCTAGCAGGCAAGGGCAGGACCACCACAAA}$ 

 $\label{thm:condition} {\tt GTCCCACCACTAGGACCAGCCTCCAGCCAGTTCTGTTGCATGGGGCAGGGTCCCTGGGAAGATGGGCAGGCCTCAGACCTCTGCCCCTAGCCCTGAGGTGGCAGTAGTGTTTCCCTCTGATAATGACATACT$ 

AAAATGATTTAATCACAGAATTTGACTTAAAATGCGAGAGGGATTCATGCTGTCCGAAATCATCCAAGA GTGGAGATATCTGGTTAGCTTCATGGAGAACCTGGCACTGAATATCAAGTCAATTTTTGATAAACAGAG AGAGAAAGG  $\label{totalcatt} TTGTTTCCAACTTTGCATCAGTGAAACCACGCAGGATGTGCTCTTTGGAATTCGACTGCCTTTGT\\ TCCACATGAGGTTTCCAACGTTCATCCACGTGGTTGCACTTGCAGCATTAGCTGGTTCATTCTTGTTGC\\ TGAAATAGT$ 

 $\label{eq:totaggactcaga} \textbf{GTGTAAGTGTCCTCAGGACCTCAGGAGTGTGTTCATTTGCTTTGTTCACGCTGAGAGTGGGAAAGC} \\ \textbf{AGCAGCCCTCTTCCCTCCCAGCCCTGTACCTTCTGTTAGATGACTTCAAATGTAGACTCTGGGGTCTTC} \\ \textbf{AGAAGGACT} \\$ 

ACTGGTGGCCTCCATTATCTCTGCATGGGCCTCCCTGCAGTGCTGCTTGGGCTTCCTCACAACATGGCAGCCAGGTTCTCAGAGCAAGCGTTCCAAGAAACAGAATCTGGAAGACTCCAGTCTCTTAAATCCTGGGCCAGAAAAAAA

 $\tt CCAAAGAGGGCATTGCTGCCTTCATCACCCTAGAGATGCTTGGAGCTCATCTGAAGAATGGCATCAAAGGGGCATCATTCTGTCCCTTTGTGCTGATGGTCTTTTGAGATGAGGGTGACCTACTCCCTTTAGATTTCCAGCATGC$ 

CATTTTCCAACATTTCTCTCCTGCCTGTTTCTCTCCCCCAGTAAAAATGCCCTTGCTCTGTAGACTCA
GAACAAAGCTCACCACAGTTTTAGTGGTCTCACTTGGGTCCAGGTCATTGCAATGGGCTATGGTTGGGA
TGAAGGAAA

 $\label{thm:composition} \textbf{GCTCAGAAGAAGAAGTATTTCCCAACCTTGGAATGATCACTGTCTAGCTCTTTCCCACAGAGCCTGATGTGGGGTGCCTGGCACTTGGGTTTAGGGAATGGCAGGCTAGAGGCTAGCTGGGCACAACCAAGGTCCTGGCTAAGGCT$ 

 ${\tt CATGTCTGAGTCTACCAGTGGTCTCAATCTAAGCTACATATTACAGCCACCTGGGGAAGTTTTGAAAAT}\\ {\tt CCTGGTGCCCAGGCTGCATCCAAAGCCAGTGAAATTTCGTAGGTGGCTCTGATGATCAGCTGAGGCTGAGGCTGAGACCACAG}\\ {\tt GAACCACAG}\\$ 

 ${\tt CGAGCAAGTGTTTTTGTAGAAGAGTTTTATTGTCAGGAACAGGGCTTTGGAAACCCTGACCAAGAAGGCCTTAACCTTCCCCTCAGCCTTGACCAGACATTAGAGGGACCTCTTCATACCACTAGGCCCTGACCTCCCTGTTTTTCTA$ 

 ${\tt TACATTTCTCTATAATATCCTTGAATCTCCTCCATCCAGTCTTGCCTCCCTATGCCCTTCTCTCATCTT}\\ {\tt GAAGGGCAGTAGTTCAGTAGTACCTTTTGGCAGGAAGCCAGGAACTGCAAAGCTCTGGCCAGTAGGAGAAGCTCTGAC}\\ {\tt ATGTCTGAC}\\$ 

 ${\tt AACATTAACAGCATGATAAGGATCCAGTGCAGTGAGGGGCCAGTGCCTGATGAGGTGTCTGTACTCGTTGGCCAAACAGGCCTTGTGGGAAGGTGCAACAGGACCTGGCCCTTGAAAAGCTCATTCTGTACTCAGGTTGCCCTGG$ 

 $\tt CTTTTTTGATTCACCATCAAAAGATAAAATGACACTGTACACTCAGTAATATTCAATTCACACAGTCCT\\ GATGTTTCCAGTTTTATTCATGTCTAAGTAATGGAGAGGCTAATGTTGTAGTTCTGTTGCTAACAATAT\\ CAGTTATTT\\ \tt CAGTTATT\\ \tt CAGTT$ 

 $\label{total} TGCTAGTTTAAAGCTAATGGAAGAATAATCCATTGAGGATCTACCCTTAATTGAAGAGCTAACTTCAAA\\ TATGAGCCACTTTCTACAACGCTGTGCCAAGAAGCTATGCGCCATGCTGGGTAGTCCCCTCACATCTTC\\ CCTTGCTAC\\$ 

 $\label{thm:control} \textbf{GGGTTCTGTATATGAGCACAATTAGCATTTTCTCAGTTGTACAAATGAATAATGACTCAGGAAACTA} \\ \textbf{GGAGGAGGGAAGGGAGGGAGGTCTCCCCAGTGGATGCTAAGAATACACCTGAGACTCCCAGTGATACAGC} \\ \textbf{TGCAGTCGT} \\$ 

 $\label{totalca} \begin{tabular}{ll} TGGACCAGCCTACCCGTCTCCCAAACATGGAGAGACCCCCGAGTTTAGCAGAGCTGCATACC\\ TGACCCACAGTGAACCACATATGCATGAGGGAGTCCAGGTGAGATCACAGGAACATCCAGCTGGCCCAT\\ AAGCTTATA\\ \end{tabular}$ 

 ${\tt TAAGCTATGCCATTCAATATGGTAACCACTACAATAAGATACAATGTTAAATTCCATTCCTCAGTCGCACCTAGCCACAGTTCAAGGCTTCAGCAGCGACACGTGGCTAGTGGCTACCATAGTGGACAGTGCAAATATAAGAACATGG$ 

 $\label{eq:condition} \textbf{GCTGTGCAGAAGCATCACTGCGTCTTTGTCTGTCTGGAATTATCTCACTTCCTTATGTATCTGTTCATT\\ \textbf{TGATTGTTGTCTGTCTCTCTTACCTGAATGTCAGTGTCAACACCATATCTAAAACAGTGTCTGCCACAC\\ \textbf{GGTGATATT} \\$ 

 $\label{thm:condition} \textbf{TGCCCACGCATGCCCTCTGTATGGAACACGCTTCCCCACCATTCTCCCCTCTCTTGTTCTCAAGGTCCAAGGCCTCGCCAGTTCCTATGCACCTCTTAAATCTCTGAACCAGTTCCATGTCCTTAGGGAAGTCTTACCCGATTCCCATGTCCTTAGGGAAGTCTTACCCGATTCCCATGTCCTTAGGGAAGTCTTACCCGATTCCCCGATTCCCCTCTGTAGGGAAGTCTTACCCGATTCCCCGATTCCCCTTGTCCTTAGGGAAGTCTTACCCGATTCCCCTCTGTAGGGAAGTCTTACCCGATTCCCCTCTGTAGGGAAGTCTTACCCGATTCCCCCACTGTCCTTAGGGAAGTCTTACCCGATTCCCCTCTTGTTCTCCAAGGTCCTTAGGGAAGTCTTACCCGATTCCCCTCTTGTTCTCCAAGGTCCTTAAATCTCTGAACCAGTTCCATGTCCTTAGGGAAGTCTTACCCGATTCCCCACCATGTCCTTAGGGAAGTCTTACCCGATTCCCATGTCCTTAGGGAAGTCTTACCCGATTCCCATGTCCTTAGGGAAGTCTTACCATGTCCATGTCCTTAGGGAAGTCTTACATGTCCATGTCCATGTTCCTTAGGGAAGTCTTACATGTCCATGTCCATGTCCATGTCCATGTCCATGTCCATGTCCATGTTCCATGTCA$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} $ACAACATCTGTAAGGGGGGGGTCTTGGTTCTTGTTCATCAAACTGAAACGTTCATGGTTCT $AGGAGGATGGTGCAGGGCCCAAAGATCGGACCCCTGGTCTTGATAAGTGCAAGAAACGTACC $CACTTGAGG$ \end{minipage}$ 

 $\label{total} TTGAAATCTTACTCCCCTGCACTCAGAGTAGAGGGGGGGTATGGCATGGTAGCTAGGAGCACAGACTAT\\ GGATTCAGACTTCTTGGCTCTAAATCCTGGCTCTACCATTTACTGGCTGTGACCTTGGGGACGTACC\\ TAACCTCTC\\$ 

 $\tt CTGGTTTTATCAGTGTTTTCGTGAGAAATGGGCCCTTGGGGCTCCCTACTCTGCTGTTTTTGCTGACT\\TCACCACCCACCCTCATATTCTTAACTCTGTATCCTTAATAGGGTTGAATGGGTTTCAAAAGGCAAGGT\\AGGCAATGG$ 

 $\label{eq:cocccc} \textbf{ACGGCATGGGGTGCCCCCCACATCCAGTTATGGCAAGAAGCATAACTGTCTCCATTTTACAGAGGAGATGCCTGGGATGTACCTCTGGTCACACAAGTGGTGCAAGCTCGAGTTGGGGTTGGAACCTATGTCTTCAGCCTCCAAGTGC$ 

 ${\tt GAGCACTGGAACTTAAGTTCTCCCTGGGGTGGGGTGAGGTGCGTGGGATGTTTTAAACAATGACAGGACCTGCAGTTAGAACTGCTGAGGTTGGACAGTGTCATGCGTACCCCACGTTCCAGGAAAGACTTATGTGTCCCTAACTC}$ 

 $\label{eq:condition} \textbf{ATGTTGGGAGGGGTTTGAGGGGGGTTCCAGTCTGAAGGAGACTACATCAGGATGTATTAATAGCTAGGGTCAGGGTCCTGGAAGGGGTCTGGAGACCAAGGTTTGAGGCCCTGTTCACCTCTGACCTGCTAGATGACCCTGGG$ 

 $AGAGTAACCATGCCTATCTCGTCTTTGGTGGCTGAGTGCTCTTTGGCCCCTGGCACCCCAGGATCT\\ AATTACTCCCATTGCATTTAGGTTTCTTAATTGAGTGGCTGTCATTGCCAATGTAAGGTTCAGCCATCA\\ GAGAAGAGT$ 

 $\label{thm:control} \textbf{ATGTCAGTGCAACTGTCAAGGTTCCCATGCACGTCCCACCACAAGGGCACACAGCGGGGTAGCTGCGTCTACCTCAAGGCTCTCCCAAAGGTGCAGCCTGGGAATGTGGGAGGGGAATGGTGATGGGATAGTGCT$ 

 ${\tt GGAATCTAACCTAACACAGTCAGCCCAGGAGAATTTCTATGGAATGAACATATAATCTCCAGTACATAT}\\ {\tt GCCATGTGCTAACAAACACATGAGAGAACTTTATGATCTGTTGTGTTGAGCAGAGAACGTCCCTTTGATTCCT}\\ {\tt TTGATTCCT}\\$ 

 $\label{thm:control} \begin{tabular}{ll} GCATGTAATGTGTTTAGCACACTCCCCAGTGTGTGTGGTGGGCATCCAGTAAGCATTGGCTATTATTAAGA\\ GCTATGGAGTCTGGGCCACATGCTACAAGACATTCAGCAGTGAAACTGTTTTGGGTTGCTGTAGAGAGT\\ AGGGATGTA\\ \end{tabular}$ 

 $\label{thm:condition} \textbf{GGTCAGTGACCCTCCTCGGACAGCCTGCCAAGCCTTTGACTGATAGGTCTCTCCCCCTGTCTGAGCCTAAGATATTTACTATGTTTCTCCACTAGCCCTTCTGTCCCATGCCCTACAATAGTCTCTCTTTCTGTGTGTTTTAT$ 

 $\tt CTGGATGGGTGAGGGGGAATTGGGTAGGGGGAATGGAGGGCCTGTGTCCAGTCTGAGTAGGACCTAGGAGTGGAAACTCTCTGCATATCCAGCTCTGACCACAATGTTGTGTAGACTCTGGACTGTCCCTAAACCATGGCCCTCCA$ 

CAGACCCTGGGAATGGCATGGGAACTGCTGTGTGGGAGACTGCAAGAAGGAGACCCTGGAGCTAAAGCC AAAGGGTGGTCCTCTTGGGAGAGAGCTTACCACCTGTTTAAGCCAGGACTGTGCAGAAAGGGAGAGTCC AAAGAGCAG

 $\label{eq:constraint} \mbox{ATTGACAAGGCCTGGGTGAGCCAGGACCTTCCACAACACCCTGCATTTGTGGGCTGGCCAGCTTCCTGGGAACCGTCCTCCCTGGGACCGTCTCAGCATGTTCAGTTCCCACTGGCTCTCCTAGGACAGTAACTTGTC$ 

 $\tt CCTTTGTCTGCGGTTGTGCTGGAGCCTCAGAGCACATCTCAGGCACAGAGTCCCTAGGACAGTCGCTGGGTGGAAGGGCACACGCCCCTGTGCTTTGGGGTGGATGTCCCCACACTGGCCCGGCAGAGCCGTGCGAGGCGCTCCCCC$ 

 $\label{thm:condition} TTCTTAGTGAACTCAGACCTGTAGTGGAGCCAACCAGGCAGATAACAGGGATTATAGGGAATTCCCGGGAAAGAGGGGTCCAGACAAAGACATAGCCAAGAAATGACAATGAAAATCCATATGGACTGGGATGTCACTGAGTGGGC$ 

 $\label{eq:cctggggttcccttgctagcacctctttctcattctcttcaagaacttggcttctgttctgagaacttggcttctgacatagtgtcctgacatagtgtccttgacatagtgtcttgacatagtgacatagtgtcttgacatagtgtcttgacatagtgtcttgacatagtgtcttgacatagtgtcttgacatagtgtcttgacatagtgtcttgaca$ 

AAAAACAAAAAAATCTTCTTCTGGGGTTCTCTAATGGGGATAACATTAATCATCTCCTAAGATGACTAAGATGACATAGGAGGGGACATGGCACATAGCAGAGCCTCAGTTAGAGGCAGAGGAAGACATGGCTG

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGCTATGTCCAGACCAGACCAGAGCAGGGACATGGCTGCTTCCAGCCAACACAGACTTTAGTGTTGCAGTTCTGCTTCAGCAGTCTGGATCCTTCAGGTAGATGAGCCATGT\\ \end{minipage}$ 

 $\tt CCTCATCTGACGTGGGCTGTGGTTTGCTTTAGAGTTTGCTTCAGAGTCCACCTATGCAATTCTCAGAGCACTGCCACAGCATGTTCTGAAATCAGAGTTGGGTCTGTTTAGTCTAGCAACCTCATGAGGACCCCGTCTTATGATTG$ 

 ${\tt CAAATTTGTCTTCATGCCTGCTCTGAGAGAACCCTACATAAGACAATCAGTATGGCTCTTCCTACTCAAGGGACGAAAATCTCAGCTCAAGGTTGCTTGAATAAAAGGATTGCTTGAATCATGCTGTGATTCACAGGAAAGCCCGG$ 

 ${\tt GATTTAGTGATCAGCAAAAAGACACTACCAATCTCTGCATTATGAGGCTTACAGTGTAGTGGAGGATTCAGATAATGACCAAAATAATCACACTGGTTAATGGAAAGTATACATTGGTAGTGGGTGCTGCAAAAGAATGGCATGTGGT$ 

 $\label{eq:GAGGTTCACAGCCCCTTTCCACTCAGATCTACAGTTGGCCTACATGGTTGGGTCAATAGGAATAGCCACCCCGAGGCTATGCCCAAGGTCACCACGGGGTTGCTTGTGAAGTACACTGAATGTGCTGGGTCCTCCAGAGCTGCTT$ 

 $\tt CTTGGAAGAAGAACCCCTTGGCAGAACCCATAAACTCATAAACAATAGCAAATGCTTATTGTTTTAAGTGTGGAGTTTTTGGGATTATATGTTATGCAGCCATATGTGACTGATACAGGCTAGATCTTCACCTCTTCCCCTACCA$ 

 ${\tt AAAGACTATTGAACTTTTCTGGTCTGTTGTAAAAATTTGCCTATATCCAACATACAGGCACAAAAAT} \\ {\tt AAAATACTGGAAATAGAGAGCAAATCTTGGCCATTCAAATGAGAGTCAGCTATTAATTCTTTGGCCATAGGCTATATT} \\ {\tt GGCTATATT} \\$ 

 $\label{thm:condition} \textbf{TGGAGAACTGCTCTAGCCCACGGTTCACATCCCACCCACTGCCTTCTGCGGGGTAGCCTGTCTGACACAGGTGCAAACATCCCAACCAGTTTTCCTCAAGATGGGACATCTCTGTGGTATAATCCATGCTCCAGAACTCCCTTGGGT$ 

 $\label{eq:condition} \textbf{AGGGTCCGGGTCTCCATGTGTGACTCTCCCACAGCTTAGTCACCAGATCTCTCGTGATCTGTGGACCCAGATCTCCCGTGATCTGTGGACACAGAAACAGGGCTACAGTGGACACAGTTTCATCACAAAACAGGGCTACAGTGGAGATCATT$ 

 ${\tt AAAGGCTACATCCCATGAAGGGGGCGTGGCAGGTCTGCAGAATGGCAGGTGGGACTGGAATGCTGAGTACCCAGGGCATGTTGGGGGGAGACGCACACGGCTGGGATGGGGGGCTAGCAGATGCCATGCCACCTGGACTTTCTGACAGTG$ 

 $\tt CCTACTCTGCGAAATTTCACGTCAGCTTCACTAACTTCTCTACATTCCCAGATGCTCCCCGGGAACCGGGGGTTGGGGATGTCCCCTCTTTTCTCAAGCCCGCCGAGCTGAGGAAAAACGGGGTGGGAAAGCAGAGTGTGTAAGGCTG$ 

 ${\tt GAGATGTTTCTCATAGAAGCAAGGCTTGAGTGGTATGTCACCTTGCTGGCCAGGATACGAAGTGGTCAGGTCAGGCCAGGATCCCCAAGGATTAAGAATGGGCTGATAGTGGCCAGGTGCGGTGGCTCATGCCTGTAACCCCAGGCACT$ 

 ${\tt TCTAAAGTATAAATCTGCTCCTGAGCCTCCCTTACTTAAGACCATGTTGTGGGTTTCAGTGAGGGGAGTGTCCATGGGTCTTAAGAAGGGGGCATGTCCACGGCTTCCATGGGCAGATGCCACTGTCTACCCTGAACATGACTTAGTT$ 

 ${\tt TATGGCACGCCAGGCATTCACTCACTGTGCATGACACTCCTACTGTGCCAGGAGACACTCGGGCTAAGCACTGAGGAACGCAGGTGTGAGCACCAGCCTTTCCTGTGCTGCAGTGATGGGAGCATTCTGTGCTGCATTCTGCAT$ 

 ${\tt CGAGTAATGATGGGAGTGTCTGCTGGGAGTATCCCATGCTTAGGAGTGCTGATCCTTGGCTCACTGGTT}\\ {\tt TCACCCAGTAAAGGCATTCCTTAGCCCATGCCATGTGACCTTGTGGAATTCATCCCATGTTCTGCTGAATCCAGGTTAA}\\ {\tt TCAGGTTAA}\\$ 

ATCTCACACTCATTGAGAGAAATAGCTCACTGAATCACCCTTGCTGTTCAAATGGTTATTCCTCTCCCT
TCTCTTTCCTCCCTGTTGTGTGTCACCGGTTGTGGAGGCCAGGGTGACCAGGGTGATGAGTGGGAAGAA
CCTGTGTAT

 ${\tt CCATCCATCCATCCATCCATCCATCCATCCACCAACAGATACCTGTTGATTCCCTATTCCAGGGTTAGAAGATGACTTAGATGGGGGCTCCCTGCTGGAGATGTTCTCTGTATGGTGGATGAGGTTGATGAGTAAAAGATGAC$ 

 $\tt CTAAATTCCAAAGGTGTGTTCTTTCCTCATTCTTGGTCACAACAAAACATCACCTGAGACGGGATCAGT\\CTGACTCGCCCAACCAGAAGGGATGATGTTTTGAGAAATCCTGTTTGTGACACTGGAGGAAGAATTGT\\GACTGTTCA$ 

 ${\tt AATTACGTACACTTTCTGCTTACATTGACTGCTCACTATTGGAACAGTGTTCTACATGCATCAGCTCACTTATTCCTTGCAACAATAATCCTAGGAGGTATGGACTCTTATTAGTACCAATTTATAGTTGAGGAAACTGAGGCTATAT$ 

 ${\tt TGAGGGGAGCCCAGCTCAGGGCTATCCATAGTCCACAATCGGGCAGGTGTTGGGCTTCAATTCTTCTCTAGCGTGTGAGGCATGAGAAAACGGGGCAACCCTGCAGGTCGGGAGGAAGGGGTAGACATGTGGCTGGGGTCCACC}$ 

ACTAAAACAACAATGAGATATACCACTACATACCTATTAGAACAGCTAAAATCCAAAATGCTAACATCA TATGCTGGTGAGGACGTAGAGCAACAGGAACTCTCATTTCTTGCTGATGGGAATGCAAAATGGCACAGC CATTTTGGA

 $\label{eq:condition} \textbf{AGTCATACTGGGAACCAGGGTTTAAACCTAGGCAATGTGACTCCAGAGCTCACCTATTCTACCACATGACCGTAATGACACACCACCTCATGTGCACACAGCCCTCCACAGTTTACCCCCAAATTCCTCATCCATGA$ 

 ${\tt GATTAGAGTGGCATCTTAATGAACCCTTTTGCTCTCTTGCACCTAGACACCTAGATGTAATTTTACACT}\\ {\tt CCAGGGCTTGTCTCCCTGGAAACACAGGTGTGATTGAGGCAAGAGCCAGCTCAGGGCAGGAGTGCCAG}\\ {\tt AGAAACTCA}\\$ 

 ${\tt TCCTCCTTTTGTCTTCTTCTTATTGCTGATGTCAGTGAGGCCACCTCACATACCCTGCTCTCTTCCTAATGGGGTTGAACCCATCCAGCCAAAAACAGGAGTAGGATCCACAGGAAGGGGCTACTCCAGGAACCACTAACACTGTCA}$ 

 $\label{eq:attccc} \textbf{ATTTCCTGTGATTCACCTAGAGGATATAACATTGGATTATAGTGATGTGGACTCTTTTACTGGTTCCCC} \\ \textbf{AGTATCTATGTTGAATGATCTGATAACATTTGACACAACTAAATTTGGAGAAACCATGACACCTGAGACCAATACTCC} \\ \textbf{CAATACTCC} \\$ 

 $\label{total} TTCCATCCACACCTAACTCCACAAAAGCCTCCTCAGCACTTCACCAGAGTGGACTCTTCTTC\\ TCTCCCCTGCCTCCTTGTCCACAGCCCTCTAGCCCATTTTCTCTGCGTCTTGACCTTTCCCAATGTAAA\\ ACTGTTCTT\\$ 

 $\label{thm:condition} \textbf{ATCTCTCACAGAGATTCTGCATCCAGTAATTATCAGCAACCAGGCCCAATTCCATGGTATTGACAGTGGTATCTGTCACGTCTTCAGACAACTCCACTACCAAGGGCCCTGCAACAAATACAAACAGGCAGAGCGTGTTTCCTATC$ 

 ${\tt GTGAGAGTGCTTTCCAGAGAGGTCCTGCTGCCCCTCCCAGAGTTCAGAGCCCCACTCCGGGTTTCTGCAATGTCAGCCCAGGTGGGGTGTCCGCAGCTCTGGGTGCGAGGGTGTCTGTGGATAGAAGAGGCAGGAGCTGGAAT$ 

 $\tt CCCACACAAAGGAGCTGCCTAGGAGAAGGTCAGTTGGTCTTGATCTTGAGCCTATAACTGGCTCTGGAGGGCAGCAGGGTCACTGCTCAGAGTCAATTCTAGGGTCAAGCTGAAGACCAGCTGACCTAGGGTCATAGC$ 

 $\label{totalact} TTCTATAGCATCTGAAATACAACCCAAAAGAAACTGAGCTCAGATGTGGCCTCAGGGTTGGACATTTGA\\ AATGGCAATGCATGGGTCTTGGCTCACAGCTCTCAGAATCCCAGCTTTGTATGTGTTTCCCTTGGACAA\\ TGTATGTGC\\$ 

 $\label{thm:control} \begin{tabular}{ll} GCATAGGTAGGCACAGGGAACCATCCAAATTACTCCTGTGAGGAGGGTGAGACAGAGTAGAGAGGGTGTGTGAAGGATGGGATGGGACATGACATGACAGGAGGAGGAGGAGGATGGGACATGAGCCTGAGAGGATCCAGAGCCAGAT\\ \begin{tabular}{ll} AGGCCAGAT\\ \end{tabular}$ 

 ${\tt GAGTGACAGGACAGGACTCAGGCAGCAAAGCAACAGTCTCCTTGTCTATTGCAATAAGAAAACCCTAGTCAGGTAGGGTACCATCTTTATTATGTACGACCTATAGTCACTGTGTTCTTGGGTGACTGGATCAAGGTGAAGGTTGAAGTT$ 

ATATGAACCAAAAGAAAAAGTAAATAGATATATAGCAACAGCAGTCAGAATAATGGGTACCTTGTGGAGGTATTGAGTGTGAGGCAGTATGAGGAAAAGCTTTTATGCTGCTGGCAATATCCTTCATCTTGATCTGTGTGATGATGATTGC

 ${\tt ATGATACATGTTATTGGCGGGGGGGGGGTACAAATAGCTCAGTGTGGCTGGATCACAGGGTTTGAAGGGTACAGCAGGGAACGGATTGTGAGAAGGGAGACCACATCCTGTTGGGTTTGTGAGCCATACTGTTGACCCTGGCCTAT$ 

 $\label{thm:condition} \textbf{TGTAGTGTATGGGGAACTCTGTAAGGCAGCTGGGGAACATTTTGAGATGAAAGTGGAGAGTAGTCACCCCAAACAGAAGCTCATCAGTCTGGTGGTTTCAGGCTATGATAATCCCCATGCCTTCCTCATAGGCTACCTGAGTTATG$ 

 $\label{eq:condition} \textbf{ACTTCTGGACAGCTGGAGACCTCATGGTGTATTTGTCATCTTAAGGTTGTCATAAAGGACCCACAGTCTTTGCACTTCCCTCCTCCGTCAACAGCAAGTCAGCAACTTGTCCTCAGTCTGGTCTTCACATCACAGATGGCTGC$ 

ACTATGCCCCCTGGTCAATCCTGCACCTTTCCAGGCCTGGGAATCCTGGGTTTTTTGTCCCAATGTGCTA GAGACTCTTGTTTGTCCCTAGCACTGGCCCACTCAGAGGTGAAGGATTGTTCTGGGCCTTGCAAGAGCT AGTGTGGTA

 $AAAATCAACTTCTGTTTTCCTCTTAATTAACATTTGGTCAAACGACAACTTCAGATTTTCAAGACCAGT\\ AGTGTGCCTTGCAGTGAACATGCATAGGCTGGAGCATCTGGCCAAGTTAAAATGTAGTTATCAATGCTT\\ AGTTATTCT\\$ 

TCTGTGTGAACTTGTATAACTTCAACTGTCTGTGCCTCAGTTTCTTTACCTGCATGGGGCAATAATCAC AGTACCTACACCACAGGGTTACTGAAAAGACCAGAGGAGAGAATGCTGTAACATGAGCTCAGTGCTGGG

 $\label{totalag} \textbf{TTGCTCAAAGCCACAGATAGTCCAAACTCCAGGTCTTTCTGATTCTAGAACCTGTGTTCTCAGCCATTATTGATCTTCATCTCTGACATCTCTGAATTCAGATCAACATAGGTTCTGATTCCAGCTTTGCCACTTTCTGGCCTTTTG$ 

 ${\tt CATATCCTCTTAGCCCACCTTGGAGGTTACCTGTAGGTTAGTGAACAACACTCTGACAGGCTCCCTATCCCCAGGCACCTGCATCCCTCTGGTTAAAGATTCTCTCTTGACTCAGGAGTCCCTGGTTCACATAGGCAGGAGTGGATGT}$ 

 ${\tt GATTCTTAGCTGAGAACTCAGAGATGGTTGTGAATGCAAGCCCCTGGAAAGCCACCTTTGCCACCGTGTCCCGGAGCCCGTTGATTCAGGTTCCTCACGGTCACCTTTATCCCCAAGCCCCATAACCTCTGAGCCCCTT$ 

 $\label{thm:control} \textbf{TGTGCTTCGTATGTTCCCTTGCCCACTAAAGAGGATTCTGACTTGACATGTGGATCTTCCCTCATCCTCTGAGCTCTCAGGAGCCTCCTGTCAAGCAGGGCAGGGTTTGGGGTTTGTTACTTAGTGTCAGGAGAAAAGGGCCAAAAG$ 

 $\label{eq:condition} \textbf{ACTGCTGTGGGATAGGCCAGTGCCACGTGGTCACATGGTCTCCACCTAGGATTCGCCTCTGTTCCTCTTTTGCAGTTGACCTGTAAAGCGCGGTCGGCTTTCCGGATCCCCAGGGCTTTTAGAAGCGGGGCCACCTGCTCTTT$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGGGAATAGGCCTGCCTTACATAGCCCCTACTCACACAAATTGCTGCTCAAGACGCCATAG\\ ACTTATGCATATTCGCCAGCTCTGCGTGCTCCAATGCCCTCAGCAGTTTGAGGGGACATCAAAACAGGT\\ ACAAATTAC\\ \end{minipage}$ 

 ${\tt TCACTCTGCTCCAGGACCACTGGCCTCCTTGCTCCTTGAACATGCCAGGCACATTCCTGCCTCAGGACCTCAGCACTTGTCATTCCTCCCCTCCATTACAGGCAGAATGCTAAAGTGGATCCCTGAAATTCTCAGCCCCTGGTATCCCTGGTATCCCTGGTATCCCTGGTATCCCTGGTATCCTGGTATCCTCAGGCAGAATGCTAAAGTGGATCCCTGAAATTCTCAGCCCCTGGTATCCCTGGTATCTGGTATGGTATCTGGTATCTGGTATCTGGTATCTGGTATGGTATCTGGTATGGTATCTGGTATGGTATCTGGTATGG$ 

 ${\tt TATGTCTCATTACCTTGGGCAAGCTACTTAACCTGTTTGTGCCTCAGTTTCCTCATTGTAGTTGCTGAAAGCCAGACTCTGAAGACCACCTGATTCAAAGCCTAGGTTTATTGCTTTCCTGATGTGTGATGTTAGACCAATTT$ 

 ${\tt AAGGTCTCAGGTGACACTGCTGGCCCATGGAGCACTATAGAGGGTTTGAAGGATTAAAGGCACAATAAGCTCATTGGGTGACAGTTGGAAAGGGATTTGTGAGAAGGGAAGCCCCTCACAGCAGGAGACTGTGCAGAGGGAAGCCTT$ 

 $\label{eq:control} \textbf{GCTTCTTTACCGCATCCTGTTTTATCAGGAGTCTGCATGACCTGTATCTTGTGAAAGCAGTCCTGCCAA\\ \textbf{ACTCTTACCTCCTAGAGGTTTCCATAATATCATGGAGTTGCAGTAGAGAAATGTGCAATAGCTGATAAT\\ \textbf{ATAGTTCTA}\\$ 

 $\label{thm:condition} \textbf{ATACAGGTGTCACTATGCCCAGGCTGGAGTGCAGTTGCTATTCCCAGGCACAATCATGGCTCACTGCCCCGACCCGAACCCGCAGGCTTAAGCAATCCTCCCGACTCAGCCTCTTGAGGAGCGGGGACTACAGGTGCATGCCGCTG$ 

 ${\tt TAAAGGCAGGCAGTGGAAATAAAATGTAGCAGAAAAAACCTCAAGGGAGAGTGCACCTCTGCCTATTTG}\\ {\tt TATTAAGTAGTGCATGTGGATGGTGACACACGGTACTCCAGGGATAGTTTGTGCTGCTTCATTCCCT}\\ {\tt CTCCTTGCC}\\$ 

 ${\tt AATGGAGGATCAGGAGAATCTTGTTAACCAATGTGTACACAGGTCAGCCTTTCCCAAGCTGGGGTCAGGAAAACACACATTGAGCATTGCTACTTTCCAAGAGTGAGCTATGATAAGCAAAGCTTCCCAAGAGTGAGCTATGATAAGCAAAGCTTCCCAAGATTAAATT}$ 

 ${\tt GATTTAGATTTAGCTCCATCAAGTTCTCTTTCAATGCTCTCGAACTGCTTAAGCCCATGGTTTTCTAACTGCCAACAGCAAGTATCTTGCACTCCCAGAAGTGCCTAAGGATAAATGGGGAAAGAGGACAAGGTGAAGAAGAGGTCT$ 

 ${\tt CGAGGTGGGCGGATTGCCCAAGGTCAGGAGTTTGAGACCAGTCTGGCCAACCTGGTGACACCCCGTCTCTACTAAAAATACAAAAAATTAGCCAGGCGTGGTGGCATGCACCTGTAATCCCAGCTACTTGGGAGGTTGAGGCAGGG}\\$ 

 $\tt CTGATGAAGCACTAAGCACTGCCCAGTACACCAGTAGGTGCTCAATAATGGTAGCTACCAGTTACTATC$   $\tt ATCTTGCCACTACAAACACCTGTCATGCTTTATCACCCAGCTCAACCAAATATACCATTTCAGAAGTGC$   $\tt CCCATCCCT$ 

 ${\tt AGGAATGCTGATTCGTGTTCTTTGTGGCTTAAGGAGTCAGCCCAGATACACTTTAACTGTGTTGTCACACTGCCATCATTATGAAATATTCATTTCATAAGTGGCTCTGGGCCTTTTGTAATGAATTCAGCCTCCTCGGGTATTATG$ 

 $\label{eq:condition} \textbf{AGCCAGACACTGTGGTACTACTGAGGATGCATTGCTGCTCTTTTGGGGCTTATGCTCTGATACATCAGTTCTTAACCCTATCTGCACATTACAGTCCCTTCAAAGTCCCCTGCCCAGGCCTTGTCTCTGACTTATTGCATCAGAT$ 

 ${\tt CAGGCCAGCAAAACTACAACCACCGGGTAGTGTGATAAATACACAAATGAAGACTAGCATGTATGGCACAGTGGCTGCAGAGGGAACATCACTGGATCTTCCTGGGGCAGGAGGCTGGTGGAAAGGCTTTGCTGAGATGGTAACATTT}$ 

 $\label{thm:cagacatta} TTTGTATTGGGCCCTAGGCCTACAAAAACAGAAATGAATCCAGCAGTATTCACAGGTTGGGGGTGGGAGCAGCATGTAAAGATGCAATACCACCGCAAGGACAATGTACAAGCTGCCAGGGTGTGGCTGTTTATGGAGGAAAAGGC$ 

 $\label{thm:condition} \begin{tabular}{l} GCTGACCTATCAGTAAGGAAGTGAAGTTCTCCCCTTTCTCCCGGCTGTCAGTGACCTTCCTCTGTGAGAC\\ TGGTGAATGTTGGGCTACCACCAGTAGAGGAGGAAGGAACACTGATTTAGGAGTCAGAGAGCCTTAT\\ TTGCTTCTA\\ \begin{tabular}{l} TTGCTTCTA\\ \end{tabular}$ 

 $\label{thm:constraint} \textbf{TGACAGACCCACAGCCCTGGGCTTCCCCAAACTCTGCCTGTGGTGACGCCCAAGGCAAGGCCTGAAGGAGGCTGAAGGAGCTAAGAAGTGGACTTGTAGCTCAAAGGAGGTAGAAATTGCAGTAGGGGG$ 

 ${\tt GGATAGAGAAATAAATACCCTGACCTCATCTTCCTGCCCTCTGGGCTGCTGGCCTCCAAACCAGAAGCAGGGGCACTGGAGCTTACCAACATGGTACACAAAGGCTGGCATCCTGGAGCTCAGAGCAGAGGAGGAGGGGGCTCAGACAGT$ 

 $\label{thm:colored} TTATTACCTACCAAGGACAGATGCCACCTCAATTTTGGAACACATAACTGAACTCATTCTCTAGTATGG\\ GAAGCCAATATGTACCAAGAGCTTGTAGGACACATGGTAGGTGCCATCATAGAGGACACATGGTATAAA\\ GGAGGGAGT$ 

 $\label{eq:condition} \begin{tabular}{l} AGCTGTTGGAAGGGGGTGAAGGAGGGGATGTCGCACAGT\\ GACAAGCTGCCAGGGGGTAGGGAGGTGTCTCTGTTAGACCTTGGTGGCCTACTGCCCAAACTCTGTAAGG\\ AGCCTTTGT\\ \end{tabular}$ 

 ${\tt TGGATCTCAGTATAGGAAGGAAAATCAGACAGCATTTCTCAGTTGTTGGCTCGGTGGGCATTGTGAATGGTATGGTTGCTGCCTCAAATGCACATATACAACCTGAGCTAAGTTGTATGAAATGATTGAGTAGGCTGACTTCAGTT$ 

 ${\tt AAGACCATACAAACAGATTAGCTGTTTTCTTCCTCTGTAGTGCTATGCCATGTGATGCCTCAAATTGCCATGTCAACACCAGCTTGGGTAGGGCAGAGTGGAAACAGGGAAGAAACGAGGTCTGTGAAGATAAAATAT}$ 

 ${\tt CTTTTCTAAATGGGTAACATAGTCAATTATAAGTGACACTGAACAACATGTCCATTTCGTCATGGTTAT}\\ {\tt GGCAGGCCCTGTGCTAGCTGTTGGGGTGACAATGATGAGGAGGACATATATGCATTTTAGAGTCAGGAGGAGCGACA}\\ {\tt GAAGCGACA}\\$ 

 ${\tt GTGTACAATGTATGTAGCATCAGCCTCACCTGAGAGCCTGTTAGAAATGCAGCTTCCTGGGTACCACGTAGCCTGAGTGAACCAGAATCTCTGGGGTTGGGGCCCAGGAATCTGTTTCTTGTCAAGCTTTCCAGTGGGTTCTGATGC$ 

 $\label{eq:aggacatca} AGGAAACAAACAAAGAGAAATTAGATGTTTGGGGCAGAATGGCCAGCGTCTCACCTCATCG\\ GACATGGCTTCCATCTCCTGGAGCTTGGCAATGAGCTGGTTCATGCTACCTCGGAGGTCCTGGATTTCC\\ CCACTGTGA$ 

 $\label{thm:condition} {\tt GCAGCGTGGATTGCCCTGATGCACATTCTGGGTCTGTTGCCGTGGCTCTGAGTAGCCTTTCAGCTCCTACCAATAGAGAAGAAGAAGATTTTGAGGGCCACAACTGACGTAGAGGAAAAGTGGTCTCTGGGCAGGGGGGTCT\\$ 

 ${\tt CAATGACGGACCTAACTCTTGCATGGAAGTGTGGCAGCAGAGTTGGATTTAAGAGTCATGGATTTAAGAGCTCATGGATCTAAGAGCTCATGGATCATCACTACTTTATTATAGAACACTCTGGGGGAGACTTTTAGTGCTA$ 

 $\label{eq:ccttctgggtctttcttcagctttgcacagacactcgtgttgagactccactatgtactcaaactgtacagacgtgttcttggagctctaacttgcattttctgcccttgaagagccaacaataagagcaacaaaaaagtgtcac$ 

 ${\tt GAAGTCTTCTAGGCACACTGCACAGAGCTGAAAGACAAATGCACAAATGAAGCCAAGTGTCTGTTAAGTACCCTCCCAGGTACAAAGTAGAGTGCAGGCTCCTAAAGGCTCAACCGTTTGAAGGGACTCATGAGACTCTTATCTTAA}$ 

AAAGCAACCAGAGTAAACTATGCCAGCAAGCAGAAACACCTAAGAAATCTCTACCTAGCCCCCATTCCCCAGTGGAGATTTGTTAACTGGGTATCTTCGCTTGAATACCAGACATTCCATTGGTGCCTTCCATAGATTTTTCTGCCT

 ${\tt AACTCCTGCTCTGCTCCCTGCTGTATTTTCCTCCATAGTGCTGACCAGAATCTAATACAATCTATACTTAATCATTGATCTTGATCTTGATCTTGTCTTCCCCCAGGAGAATTTCAGCTCCACGAGAACAGGAATTGCTTGTCTTG$ 

 $\label{eq:total} \textbf{ATCTGAAGTTACTACTGCTTATCTGCTTATCCTGTGTCTCACTGATATGCAAACCCATGAGCAAGTGTCTTTGTCTTAAATTGCTAGGACTTCAATGCCTGGTGCCCACTGGGCACTCAATAAATCATGATTGA$ 

 $\tt CCTCCGAGGGGCAAACCCTAACAGGTCTGGGAAATTGCTGTGTTTTGGACTTTTGCCGAGTACATCTTGCAAGGTCTGGGAACTGCTCTAGCCAATGGACTAGATGTTACGTGCAATGACCAGTGTTCTGTACCCTCCAT$ 

 ${\tt GAAAGGGTGGAGCACAACAGCTTTCAAGCAAGGAAGGCAGGGTGGAGGTAGCTGGCAGTAATATCAGCAATAACACTGACAGTAACCACTGGCCTATTGAGTACTTTGCATCAGATACTGCATCAGATACTGCATCATGTGTATTGGCT$ 

 ${\tt TCATTACCGTCAATTGATAGTCCACAAATACTCGGAGCAGAGAACTCAGTGAGACGTGCTCATTCTCGACCAGGAAGCTGATCGTATGAATGGTGATTTGCCTTTCAAGACACTCACCTGCTCTCTAGAGTATTGAAGTCAAAATGG$ 

ACAAAAAACAACCAAACAAAAAAACAACCCCTCCCCACTCACTACAAAGACCAGGAGGCAAAGAGACGG CACTTTTGAGAAACCTTAGTCTGACTAGAGGTGCAGGGAGTACAGGAGATAAGGTGAAGGAGTTGGGTG GGGAGGAGG

 $\label{total} TGAAAGATACATCACTTCTTAAGTTGAAGATTCTATTTACTACTGAAGGCCGTCTTTCAGGAGAGGTCA\\ TCAGTTTACTTTTGGAGTGAGGGATGCAGTGATTGAGAATAGAAGCATATTGCTAACAAAGGGGAGAAA\\ GAATAAAAA$ 

 $\tt CTCAGATCCTTGCTGGACTCCTCCACTCCTCCTTCCCTCCATCTAATTCTAATTCCCACTTTGTGTATA\\ AGAACCCTAGCTGGTAAGTACTGTTATCCCCATATTGCAGCTGAGGAATTTGAGGCTCAGAAAGGGAAA\\ GAGGGTTGC$ 

 $\label{thm:control} \textbf{GCTCATTGGCATGTTTTATTAAGCCCACAATATGGTCCCCTAAAGAAGATGGAAGAGAAAAGAGACAAAGACCAATTCTGTTTCCCTACATATTTAAATGGGAGGTAAGTCC\\$ 

 ${\tt AACCTAATAGCTGTGTTTTTGGACTCCTTACCTAACCTCTCTGTGCCTGGGTTTCTTAAACTGTAAACCAGGAGATAACGATAGTCTCCACCTTATGGGTTGCTGTGAGACGTAAATGGGTGAACACATGTGCACTATTTAAGACAG$ 

 ${\tt GTGACTACTAATACTGTCTCACCCACCATGTGCTGGGCAGTATTGGAAGTGCACTTCATCCTCATAACACCCTGAGATATGCTCCTATAACTGAGATCCCCATGCAGATGAGGAAACTGAGGCACAGAGAGGCTGAGTAATCTT}$ 

 ${\tt GAAAGCAGGCTTAGGTAACTAGAGATGACCTTCAGACCAAGAGTCGTGAATACCTACAGTTGGCATCCT}\\ {\tt TAGCATCTGGACTGCACAATGTGAAGTGATGAGTTTGGAAGGACGCAGGGGGTACCAATCATTCCTGCT}\\ {\tt ACATACACT}\\$ 

 ${\tt GAGGAATGCATGACCCCCAAAGGTGGTGCTGACAGGAGGCAGTGCTGGCCAGGGCATTTCCAATTGCAGGCAATAAAACCATAGCTCCGAGTAGCTGGACAGCATGGCTGCCACATGACATGCAGGGAAATATGGATTCAGGAAT$ 

 ${\tt AAAAGTCTGAGTTTTAAGTTAGCTATTTGTTCCTTTTGCTTTACATTATGTGGGATTCATTTAGACTTC} \\ {\tt TGGGAGAACTTCCAACAGTGAGGAAGCAAGGGACAGTTGCAAAAAGGCAGCCCTGATTTTCCAAAAAAT} \\ {\tt TGTGCTTGG} \\$ 

TAACATTTTGCCCGTTCTGTATACCCGAAGACTGAAAACAGTGTTATCCCATTTGTCAGTACTCCCATTCCTTCGACCCTGACAACAGGCACGTTCACAGCACAGTCATCCCTGTTTTTTGCCCTACTTTAAGCACCACAGTTTGGGAG

 ${\tt GAAGCAGAAAGGAAAACATCTAGGACCCTCAGTTCCAATCCCACTCTGCCACCACATGCACGACTTCT}\\ {\tt TCTCCAGCCTTTGGACATTGTTGTAGCACCAGAGACCAGCTTCTCAGCTTCAAATCCCAGTCCCACTGC}\\ {\tt TTCCTAATT}\\$ 

TCCAGCATACCTATGCCTCCCCTGGGGTCTTGTTAAAATGCAGGTTCTGATTCAGGAGGTCTGGTAGGG TCTGATGTGCTGCATTTCTAACCAGAGCCCAGGAGATGCCACTGCAGCTGATGCACACGCCACACTAGC CCTGAGAAG

 $\label{thm:condition} {\tt GTAACAGACTCACATACCCATGACAAAACCAAGGAAAAGTTGCTTCCCCAGGGTCTCGCCGCTAGTGCAGTGCAGGAACCAGGACTCAAACCCCCTTAACCCCAGTGACAGTGTCAGGCTCAAGGTCATGGCATAGGGTAGGGATGGG$ 

 ${\tt TTAGCAAGGGTCCCAACTGTGGCAAAGTGGCAGAAATTCAGAGCAAATGGATACCGTGATGTATCCAGATCCTGGAGTTGATGCTGCCAGGGAAAAGCATCCACTAGATCTGAATGTCTTCTAAATGTGCTCATTTGGAAGATCAC$ 

 ${\tt TCACGAGTGTATAGGTCAACTGGAAGGTTCTGCTGATCAAGGCTGGTTGGCACTGATCAAGGCTGGGCTTGAACTTGTGTCTGCAGTCAGCTGGAGGATCAGTTGGGGTTGGCAAGTCTAAAACGGCATGGCTTATATGCATAGTGG$ 

 $AAATATAGTATAGCAACTATTTACATAGTTTACATTGTATTAAGAATTATATGTGAACTAGAGATGATT\\ TAAAATGCAGGAGAGGCTGTGTAGATTGTATGCAAATCCCATGCCATTTTATACAAGGGACTTGAGC\\ ATCCATGGA$ 

 $\label{total} TCAGTAACATATAGGCACACACCTTCTCTCAGTGTGATAGTTATCCAATACCTATCCAGCACTTTGC\\ TAGACAATCTAGGGGCTATGAACAAAATAAAAACTGGGGTCTCCCTAACACAGTCTAAGGTGTCAGTGT\\ GGAAACAG\\ \\$ 

 $\label{thm:cotog} \textbf{ATCCATGGGCTTCGGGGGTGGCTCAGTTCAACAGTGAAACTTGATTGGTCCAAGGTGGTCATAGTAATTCCTTGCTAGTGATTGGCTTAGGTAAAGAGGATGTGACACAATGTTAGCCAATAAGAGTTGACAGAACATCTGG$ 

 $\label{thm:control} \textbf{TCCAGTCCCTGGGATGCAGTGATTCGGTATCAGGATGGCATGTGACTTCAGATGGTCTATGACAGTGGACTTCAGGATCCTGGTATGGAATTGGGATGTGAATAAGAAAGCAAGTCTCATCAGAATCTGCTGGCAGCCATGGGGGCC$ 

 $\tt CTGATTGACCTCGGGCAAGTTGCTTCACCTGAACCTCAGTTTCCTCATCTGTAAAATGGGGATGATAAT$   $\tt AATACCTGCCTCCCAGCAATTTTATGATGATGAAATGAGATTTCGGACATAAAGCACTTACTAGATGCT$   $\tt CAATACCTG$ 

AGACTGGGTAGAGCTGTCTGCAGGTAATCTCTGAGGGAATCTAAGTCTCCCCCACATGGCCAGTAAATGGCAGAGCTCAGAGCAGACCATCTTGGCCACAGTGCTGTGCTTGTAGCCTCCGCACTAAACAGGTGTTGGGTT

 $\label{eq:condition} \textbf{AAGTGAGGCCGTATAAACAGCTGGGTCCCCGGTGACTCATGGAAAGAGCTGCTGGAACCGGGTGCAAGGTCCTCTGAGGCCATAAGTATGGTCCTCTGAGGACACATTACCCTGCTGTTGGCCTTTTTGGCTGGTAGAGGAGACACT$ 

 $\label{thm:control} \textbf{ATGCATTATAGAATGTTAGCAACATCCCACCGGCATGATTCCAGTAGCACCCCTCGCCCCCATCAGTTGTGACAACCAAAATGTCATCAGACATTGCTAAATGTGTCCTGAGAGGCAAAGCTGCCCTGGTTGAGAACCATGGGGAT$ 

 ${\tt CAAGTGGTGGTGTTATCACCTGTGCTGTAATACCTCCCAGTGCAACCATGCCTATCACATTGGATGATGATGCATTCAGAGCTGCTAGTGTCAGCAAAGCCAGGCTCCAGTGTCACCAGGGTGGTTTGCCTGCATCACAGGTTCTTCG}$ 

ATCACCGCATCCCTCCATGCTTCTAAGTTTTATAAACAATCATGAGTTCGAAGTCCCCAGATTTAAGACCTTCAAGTCTCCTGGAGCCACCCCTTGTACTCAATGAGCACATATCATGGACAAGGTTCCATTACGGGCCCCAGGAAC

 $\label{thm:colored} \textbf{TTCCCACTCGTTTCTACTTCTCAGAGCTTGGTAACTTCCCTCACCCTTGGAGAAGACTAGGGGCTTAGTCCTGGACAGCATACAAAATGCTGGGGGACACTTGGCATAATTAGTTCAGCAGGGGAGTGAGGGGACTAGATTGAAA$ 

AGCAAAGGCTTAAAATGTGCTTGCATGTTTGGGCTTAGTCTCTTGCATGCCTATTTTTTTGCCATGATGAC CAGGTAGCCACAGGTACAAGGAGGCCCCAAATGCATGGAACAGACTTGAGCCAAATACATGGCCTGGAG TGCAGCCTG

 ${\tt CACCATCTCCTCTCACCTCAGATGTACCCTGCTTCCACCCTTGAACCCAACAGTCTCTTCTCCACTAACCCCATCTGAACCCATGTGTGATGTTTAAAATCCTAAGTCAGGTCACAGCACATGTCTGGCCAGAACCCTTTAACATCTTCCCATCTCC}$ 

 $\label{eq:condition} \textbf{AGTACTGCTACTTCCTTAGATTCGGTGAGGCCCCACATCCTGCTGATA} \\ \textbf{ACCCTCTTTCTGTTGCTTATAACTCAGGAGGCTTACTGATCCAGGGTCGTACGGAAGCACACAGTAACT} \\ \textbf{AAAGTGTAC} \\$ 

 $\label{thm:condition} \textbf{GAACTCAGAGAAACCTGACTCAAGTCTTGTCAAGGAGAGAATGACAGAGTCCAGAAGGGCGGAGCTCAGGGCTCAAAGCAATGCACTTCTGATCCTCAGTGGTGGTGCCATTCAATGACTTCGGCTTCAGGTCCTGTGTTTTACTC$ 

 ${\tt CAGCCCACATCCACAGACCTGAGAACCAGGAGAACCAATGGTGTCAGTTTCAGTCTCAATCTACAGGCT} \\ {\tt TCAAACCCAGGAGATCTGATGGTATAAGTTCCAGCTCAAAAGCCTGCAGGCTTGAAACCCAGGAGTAGT} \\ {\tt TGATGTTAC} \\$ 

 $\label{eq:control} \textbf{ACATAGGGTGGTCTTGTGAGACTTTGTAAGGGCAGCCCCCATCCTGAAAAAGATCTGCAGTCAGGATGGGCACTGTGTATAGCCCTGGGAGTGCATCGTACTTCACAGGAATGTCCTCTTGCCCACATGTACACTCCATTG$ 

CCACCCAGGTCTTAGGTAATCCCTCTGGCTCAGGACACCCGTTCCAGCTCCATATCTCAGTCCAGAGGG AGATGCTGTCAAGGGGATGATGCGGGTGTTGCTGGCCCCCCACCTGTGGTGATGCCGGGGCCCAGGAGG AGGGAATGG

 $\label{thm:condition} \textbf{GGGTAGATGCCTAAGGAGACTGTTTAAAACTGAATTCGTTCACTGAAAAGACATTTATTGAGTGCC} \\ \textbf{TATTACTGACAAGTATTGTGCTAGATGCCAAGGATACAGTAGTGAATAAAATTTGACACAAACTCAGCC} \\ \textbf{CTCATGGAG} \\$ 

 $\label{totacctcctcctcca} TGAAAAAACTCCTACCTCCTCCCAGAGGAAACCTTCACACTGAGGTGTTTGTGCTCTTGCATCCAAGGAGCCTGGAACACACAGAATACATGTACCTCATGGAAGAACACTTCTGGAACACTATGAGTAAGGCAGTAAGGACACCT$ 

 $\tt CGGGCTAGGGCCACATGGGAGGGGCGCCTGGTTCCTGCGATGGTCCGGGGACGGGGATCCTGCCGAGATGCTGGGCTTAGGCCATCTCTGAGGCACAGCAAGCTCAGGCTCTGAGTTGAATGGGTCAGGTTTGAATCCTGACACAAG$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGCTACCAGGGAGGCAGGGCCTTGACAAACATATTACAAAGTCATTCCACATTAATACAAGAT\\ GCAGGGCACTGGAACTTCTGAAGATAAGTGACAGAAAGGCTGTTCTGAGCTTAGGCAGTCCCTGGGTCT\\ CTGATCTCA\\ \end{minipage}$ 

 ${\tt TACTCCCATCCTCACCCCAAAATTTTGCCTGCCAAGCTGACTCTTCCTTAAGGTCTCAGTTAGCCACCTCTTACCTCTGGGAGAGCATCCTCTCCCCTTCTACCTTCCCCCATAAGAGCACTTTGCATTCTGCTTTATAGACTGATTT$ 

 $\label{thm:condition} \textbf{GTCTCCAACAGGGCTTGGTAAAGCATGTGAACATTCTCTAGCCAGTATGGTGCCACAAGAAGCAACAGTTGCTCCACATCCTAGAAATCCAAAGAAACCAACAGTTGAGGAAAAGCAGCACCGAACACCCTGCTTA$ 

 ${\tt TCTAGAGATGTCTCATGTTTACCAGTGTCTGTTCCATCTATCCTTGGGCATAGGAAAGAGTTCCAGTCAACTTGCAGTTGGGCTGTTGTCATGTGACTAGCTCTCATCAAGGCCATGTAAGTGGAAGTGGCATGAGTCATTCCGAG$ 

 $\label{totalatacagt} TTGGATGGTACTAAATACAGTTGCACTCCCTCAAACCCAGAGTGGGAGGTGAGACAGAACAGCCACTGAGACAACAGGGGTTGTGGAGGTTCTGTGGATCTCTGACCTGGTTCTGAGTCTAGTTGACTACTGGCCTCATTCTTTT$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGCAGGGAGGTGTTGTTGGGTTGTTTTTTTTTTTGGATTGCAAGTGTCATTGATGCATATTTAATA\\ CCAATGACACTGCTCTGCTGTCACTATCAGTGCCCCATGCAAGCCTTGGGGACATCTTAAGGAAAAAAC\\ TGGCATAAA\\ \end{minipage}$ 

AAATATTAGTTCAATCCTGTCTGCATTTTGTTCCTTTCTCTCTAGACCTGAGAATAGAGGGAATTGGTA GGAAAATGCCAGCGGGCCGGTTTCTAATTCCACCAAGAAGACAAGGAAAATGGGTTGCAACAGCAGCCA GAGGACAGA

 ${\tt ATATCTAAGAGGTTTAATGTACTGGTTAAGAGCATAGGATGTTGGGACAGAGCATCAGGGTTTAAATCGCAACTTTGCCTCTAGCAGTTTGATGTTGGGCAAGTTGTCAAACCTAGCTTTGGTTCTTAAACTCATCTATAACACTG$ 

 $\label{thm:condition} \textbf{TGCTTCTGTTCTTCTTCTTCATCTGAGCTTTCCATATCACAGCAAACAGGGCCTCTGGCAATACTGGCCTTTATCCTACCAGCCTCAGCTGCATGGGAACAGCAGAGAGCATGTTTCCCCCACTAGCAACAAG$ 

 $\label{thm:condition} \textbf{GCCTACACATGTGCATGTAAATACTCCCTCTGACTTTGACCTTTCACCAAAACCCCCGAACCCTACCATTCCCCATTCTGTCCTGGGGAATTATCCATATCTCTGACAAGAGAATGGGTTACTAATGCAGCCACAGAGCTGTTTTG$ 

 ${\tt GCAGAAGTCTGCTGAGCAGGAGGGGCACAAAAGGGAGAACACAGTAGGAAGGGTTGAGGTGGGAGGAGCCTGCACTTGTGATCAGGACTTAGAATGTGTGACAAAAACTAGTGCTGCACATATCACCTGAGCTGAGACTGGGAACCC}$ 

 ${\tt GACAGCTTTTTAGGTCCAAGCATTTCTTAAAAGTGCTGTACTCCCAAGAGTGAGGCAGTTCGTCATCTT}\\ {\tt CAAAGGCAGTTTGTGCTGCATCTCCTGGGTGTCCAGACCTAGCTTAAAGAGATACGGGTTGTTCTAAGAGAAAAGACA}\\ {\tt GAAAAGACA}\\$ 

 ${\tt AAACCCAATCATCTTGCACAGAGCACTCTCTATGGCTGACACACATCCATTAGACAGCAACACCCACATTCCCCATGGAAGAGAGATAGTACTGCGAGGTTCATGGAATAGAAGAGTTCTGTCTTCAAGTTTGGGTCTCTGAGCTGCCT$ 

 ${\tt CCCTTGACTACTCCCACCCCAACTATTCCGTATTGGTGCTCTTTCCTAGCTCTCGCAGAACCATTGTACTGTGGAAATAACACAGGTTTCTGGATTAGTGCTGGGTTCAAAGCCTGCTTCTGACACGTACTCTATGAGTTTGGGCAA}$ 

AGAGAATTAGGAAGGTGGGGAGAACCAGTCAATGCAGGCAACTTAGAAGGAGCAGCCAGGAGAGGCGTGCTGTCCCGGGAAGCCAGGAGGAAGGTACCTCATGGGGAGGAAGGTGCAATCTCTGTGCTGTATGCTCTAATGGGCTGGG

 $\label{thm:condition} TTAGGCCTCACCTTTGACACTGGGCATCAAGTTTCAACCTGAGGTTTGGAGGGTCAAATACCTACACGATGCCAAGTGCTATGTGAAAAACTGAGGCGAAAGCCCAGTTGTCTTGTCTAAGCTTACGGCAAAAATAAGGTGAAGGTT$ 

 ${\tt CGACAAATTTAGCAAGTGGGCATTTATGACTCTCATCTTTTCCATGCATTGGAATACTGATCTGAGCAA} \\ {\tt AATATGGCCTTTGTCATGAATGAGAAGGAAAGACAGAGACATTGAGGTCTGTAAGAGGACAATGCACAA} \\ {\tt GGTATTGGA} \\$ 

 ${\tt TTTAATTTTTTCTGAGATGGGGTCTTGCTATGTTACCTAGGCTGGTCTGGAGCTCCTGCCTTGCCTTGGCTTCCCCAAATCCTGGGATTACAGGTGTGAGCCATCACACCAGGCCAGTGCTATTTTCCATTTTTTTGGAGG$ 

 ${\tt TCATAAAAACATTAAATTTCTGGTTAGATTCCAAAATTTGCCTGACCATAAGAAACACTTGTGGTACTTG} \\ {\tt TCAAACACATGTATTCTGAGTCCCATCCGTGATCTCCTGAATCAGAATCAGCAGGTGAGAAGCCTGGGAATCACACATT} \\ {\tt ATACACATT} \\$ 

 ${\tt CCTTTTCCTGTCTTATGGCATTAGTTGAACTTGAACAATGTTGAACAGACACACAATGTTGAAAAACCTG}\\ {\tt TCTGAGTTTTGTCAGATTGTTCTCAAGGAGTCGGTTCATTTCATCTAGGTCATCAAATTTGTGGACATAGAATTG}\\ {\tt ATAGAATTG}\\$ 

 ${\tt AAGAAGTGTCGTACTGATAGGGGAAGTCTCAGAATGCAGTGGCTAGCTTCTGCAGAGAATTGTGGGGCTTCTCCAGTGACCCCACAGAAGAGTTACCTGCCACGTCTCCATGAGATTAACCCAGTTTCCCAAAAGTTGACATATAAT$ 

 $\label{total} TTCATTGAGCACTTCCTAGGTGTCTCCTGCCAAGCACGCTTCCATGGCGAGGGTTAGATGACACACCCCTTGGCCACACGCACACTGCCACACGCACACTGTGCCACACGCTTAACCACTTTACTTCTACATGGAGCATGGT$ 

 $\label{eq:constraint} A CAGAATTTTTTCTGGATTTCCTGCCTGAAGCATGAAGTGTACTAGAAACCAATTCTTCCTGCGCTA\\ CTTGTGGAATCTTTCTTACTGGATCATAATCTTACTTTATACAATAGATGCTTAATCAGTGCCT\\ TTAATAGGA$ 

 ${\tt CAATCACCCCTTGAGATTGTATGCCTGATAAATGAAGTCATAAACTGAACATGACATGAGGTCTATTCAAGAGTAGCTCCAACCCAGAAGAGGAGTGTCTGGAAGTGAAAGGATAGCTCATGTGCAGTGTGCCTAGGAAACAACCTG}$ 

 $\label{eq:total} \textbf{ATAAATGACTGTTCTATAGCTGAAAGGAAAACTCTAGCTTTATTTTTCTCCCCAAACTTAAGCTTTATTCTACGTTTGTATAAAAAATTACAGCTCAACTTTGGAAGCACAGATCATAATAAAAAATAAAGCAAAGATCC$ 

 $\label{thm:colored} \textbf{TTACTCCACAGAGGCTGGCTAGGACAAAGGGTCTCAATGTCATGCTGAATTCTGAGCTTCTTAGGGGACGCACTTGAGGAAATCAACGTTAACACACAAGTTTCCACTACAGCAAGACAAAGTCAGAAGCAGCACCCCAGGTCACT$ 

 ${\tt CACACAGAACAGAGCAACAGAAAAGTGCATGTTTGGGACGTGAAATGGGCAGGGGTGAAGCTGGAGCATGGACCGCCTGCCCTCTGACCTGGGCACATGCAGAAGGGCTGCCTCTTGGGTTCAAGCCCTGGATGAAGGTTG$ 

 ${\tt CAACTTCTTCACTGAATGTTTTGTGATAAGAACCAGTCCAATGTGCCTCCCTAAACCCCTCACCATCTAGATGGGTTATCCAGTCTGTCCTGGAAAAGGGAATGCTTTAGCCCTAGGGACATTATTAATGTTTCAATCCTAAACTGT$ 

 $\label{thm:condition} \textbf{TGGTTCTCATACCCCATCAAAGGGACAGACTGCTCACAGGTGCTTAAGATCATCCTGGCATGGACCCTT}\\ \textbf{GTTTTATGCAAAGTGTGTGCCAGTGCTGGATGTGAAAACACCAGTCGATTCCCATTCGCTGGTCTTAGCCAGTCAGAA}\\ \textbf{CAGTCAGAA}\\$ 

 $\label{thm:condition} \textbf{GTTACTCCCCAAGGGTACTCATGCTGGCACCCTGAGGCCTTCTCAGCACAGAGCTGCAAATGGGCAACCAAATCTCAGGCCTTGCTGGTCATTCTGAAGGTCACACTGACAGCCTATGGTCAAGCAGAGCCAGCTGCACAGCCTGCAAGTCCT\\$ 

ACACTGCTGCTGAGTCTCATCTTCCCCCACTGTATACCTAGTGGGTGATTTTCTAGATGCAACTGTTAGATTCCTCCTCGTGGTAGGTTTTAACATAGCTTCAGCCTGTCAAGAGATGGTCAGATCCTAATCCTGTCTTCCAACGTGTT

 ${\tt CAGTTGTGTAAGGGGTATCATCCTGCCTGCACACTGTTTCCTTATCTGCAAATTGGTCTAGCACGCCACACTCTCAGGATCAGTGGAGACCAGAAGAGTGTGGGGGAGATCAGCACATACAGGTGTGTGGACCAGAGATGAAGACCC}$ 

 ${\tt GTGGATTCATGACCCAGGATTCTGTCCAGCCTCCATAGCTTGGGCCTTGGAGTCTTTGTAGATCAGCCTCAGGTTGCTTCTTAACCCAAGACCTGTAAAAGAAGGGACACTCATCGCTTCCACTCATGGTCTGTGGGAGATACCTGGT$ 

 $\label{eq:addadd} AGGAAAGCCTACCATTTGTGATAATATGGATAAACCTGGAAGGCATAATGTTAAGTGAGCCAGTCACAGGACAGATACTGCGTGATTTCACCTATATGAAGTAGCTAAAATAGTCAAACTCATAGAAGCAGAGAATAGAAGTGGTGGG$ 

 ${\tt GAAGAGGGAATGATGGTTCTGAAAGAATAGGTTACCTCAGGCCACACAGCAAAGATGGTATCCACAGCCTGGCTATAGATCCAAACTGCTACTTGTTCCTCTGGCCACACTGACTACCAAACAGCTTTGCCTGATTCTCTA$ 

 $\label{eq:condition} \textbf{ACAACCCATCATGTGAAGTCAGATACTGAGGGTTCAAGCCCCAGCCATGTCACTTACAGGCCATGTTAT\\ \textbf{TGTTCTGAGCCTCAGCTTCATTGTAATAATTCCTCCTTGCTGAATTGTTTTGAGATTAAATGGGA\\ \textbf{TAATATACG} \\$ 

 $\label{eq:condition} \textbf{GCTAAATGATTCTTCCACTCCGTGTTGTTGTTGACTGTTCATCTGATGGCTGTCCTCATCTCAGCCAACTCCAAGACAGCTCAGCTTACATTTCTGGTGCCTTAATGGACTTGGCTGGAAGGCTAACCTCAGCAGGACACTCTTCC$ 

AGTTATGCTGTTCCAAGTTCCTGTACACATATGTATCCCTAAACTTCTTTGCTTTCCTTTGTGTAACTA
GGAGCTTTGCAGGGGCACTCACTGAACAGGTGCACTGTTCTCTGAGGAGCACAGCTGGGGATGTGTGAG
GGATGAAGG

 ${\tt TTATATAGACACTTTGCCCAGAGCATCTGTTATATCTGTGTCCACCACCACAAACTCAGCCTCTCTAGGACCAAAACCAGGTCTGAGTCATGTCAGCACCCAGCACTGGAGGGCATAGCACTGGAGAGACAGCAATACATGCACCTGGT$ 

 ${\tt TATTTAGTAATGAGGGGACATGTGCATTAATCTCTTAAAGCTTTGAAATAATTAGCAGCATGGTCTTATGCTTCCATGGCAAGCTACCCTGTGTACCTTGGCTTTTCAAAGCAGTAGATTTTAGGTACGCTATGTTTACTAAACCT$ 

 $AAGTCCTCTCACATAGTACCAGATGTTGGCATAAGATCTTTGGGTGGCCCATAGAAGTGTCATCAACAA\\ ATTTCAGACAGTGTTTAAGATGGAGCATGGCAGATACAGAGTGAGCATCAGAGAGTCCAGGGGTTAATGGCTCTTGTC\\$ 

 $\tt CGGTCAGACAATGGGTTTGACTCCAGTTCTGCCATCTGCGAGTAGGTGACACAGGTCATTCACCTCCATGCTTAGCCTCCATAGCCTCCATAGCCTCCATAGCCTCCATAGCCCTACACCCCACGGAGTGGCTCTGACAACTTAACAAGACAATATGATA$ 

 ${\tt AATCCCTACAGGAACCATCTTTAATAAGTGTCAAAGTAAGGAGTCAAGCTCAGGCAGTCATGCCCTTATCCCACAAATTTTGAGATTCTGCCATAGCCAGGTTTATGCCTTGCTTCTCACTTGTGATGGACTTTCCAGAGCTTGGCC$ 

 $\label{eq:condition} \textbf{ATAAGGCAGGCACTATTCTAGGTCCTTCAGATGATGAACATTTTCCACCCTCATAAAGGAACTCCACACGGGAAGGGTCCGCATCCCCATTTTACAGATGAGGAAAATGAGGCACACTGAAGTTACAGAATGTGCCTGGGACCACAC$ 

 $\label{eq:contract} \textbf{ACATATACATATACACACACACACACACACATATACGCATGTTTGTGTATATAGAGGCATACCCCACACTATACCGCAGGTGTGCCTGTATACGCGAACCCAGAATATCTCCGAGGTGTGCCTGTATGTGTGTATACTGTGTGTTGT$ 

 $\label{eq:control} \textbf{GCCAATCATCTTCCCATCCAGTGTTAATCTCCCTAGTAGCACATGCTCTGTCATCTCCTTGT} \\ \textbf{ACACTGAGTGTTATCTTCAGTGTGAAACACAGGCTCAGGCACTCAGATCAGGCTATGCTACAAAGTAATGAAGCACTT} \\ \textbf{GAAGCACTT} \\ \\ \\ \textbf{CONTROL CONTROL CONT$ 

 $\label{thm:condition} \begin{tabular}{ll} GCAAACTGTACCGCATTTTAAGCCTCTGCTTGCATCTTGTAGGTTACCATGCCATTGGTCCAAACTAGT\\ CACATGGCCTAGCAAGGGGTGAGGAAGTACGCTGTGCTTCCCTAATGGGAAGATTTGCAAATTCACATGGCAGAGGGT\\ GCAGAGGGT\\ \end{tabular}$ 

 $\label{eq:gcagacttccccaggaaccttgctcagcttgccccaacttgatcaactaaccatttcatctgcctcagcttgctccccaacttgccccaacttaaccatttcatctgcctcagcttgctcctagcttaccaattttaccaattttaccaattttaccaattttaccaattctaccaattctacca$ 

 $\label{eq:total} \textbf{ATTTAATAGCTTCCCATGGAGCTGGTTTTATCCAGCTAGGCTTTAGTGTGCCATCTCCTTGTGTGGAGAGGGGATTTGAGTCTCACTGTGGATCCTATCATTGGAATTACTCTAAGAATATCATAGAAAATACTGAGGATCTCT$ 

 ${\tt GACTAGCCATGAAAAGAACAGACAGAGCCCTGCTCTTAAGAGCTCACAGTCCTGAGGAAGACCTGGATATAAAGCAGATAGTCACGAATCAAAGATCAAGTTACAAACTGTATTAGGTTTCATAAGAAATGCAGGGAACCATGTGT$ 

 $\label{thm:condition} {\tt GTCAGTCAGCGTCAGGCCACAGGTTAGGGCCAAAGTGTTCCGGGGCAGGTATATTTTTGAGAATTCCCAAGTCAGGGGGACCTCCTAGGGGAATTCAAGTCTACGTGTAGGACATACTTTGAAATGAGACTGCTGAGGTTTGC$ 

 $\label{thm:control} \textbf{GTGTTGCTTGGTTCAGTCCCTGCTCAGATGTCATCTTCTCAGTGAGGCCCT}\\ \textbf{CTCTTCCTACTCCCAAACCCCTTGACTTGCTCTATTTTCCTCTCGCCATGGCCCTTAGAACTACCTAAC}\\ \textbf{ACACTATGC}$ 

 $\label{eq:GAAAATGAAGTTTGAAATTGAAGTCATGAAGTTTAAGGTCTAGTAGATGGTCATTCCAATGGAACAGTGGGCTTCAGTCTTTGGTCAAGGTCCTTCCCAGTTATGACTACCTAGACATTATGTTGTAGTTCATATGAATCCAGA$ 

 ${\tt CAAACAAGACGGCTTCTATGAACGAGGGAGAAGTGGGTGAAGGATGTCAGATAGGCAACTTCGGTATTTGCCAGAGAACTCCTTCCCAGTCCCACTGCGCTCCCTGGAGGTACTCACCATTAACAGTTTGGGATATA}$ 

TATAGTGGTTAAAACCACTGGAGTTATTCTGTTAGGGCTCATAGCCTATCTTCTCCACCTATTATGCCA CCTGTCTAACCCTTGATTGTCTTATCTGTCAAACATGGTAAAGTCATACCTCTTTCATAGGGCTGTCGT GAGTATCAA

 $\label{eq:condition} \textbf{ACTTGCTAGTGCGTTCGGGCTGTCCCTGTGCCTACTTTACAGTCATCTCCATTGTGATAATTAC} \\ \textbf{CCTGGGTGTACAGATGGGAAAGTCACACCCGGGGAGATTAGGGAGCTGCACAAGGTCACAGGCCAGCAG} \\ \textbf{CAGGATGGT} \\$ 

 ${\tt GAGTCACAGTTCATTTATTCCCTGCCTGCATCACTTGCTTTACACTCCTTACAAAATCATATACTTCTGGTACCCAATGGTGTCTAGCATAGGTTGCCTATTGTAAGGTGTCTTTCCCTCTTCCCAGTGTAGGAGCCAGAATCTT}$ 

AGGGGCAATAGGGAAGCAGGCCAAATAGGGGTAGAGTTTAGGGTCCTGAGCAATGGCGTTTGGTGGCAGCTGTGTCCTCACCAGAGCCAGGGTCCATGGGGTGATTTTTCACTCTGGCTCCTCCTACCCTTCCTCCCTGGTTCCTACCC TTCCTACCC

 $\label{eq:condition} \textbf{AGTTCTCAAATTGCGAATTCTGAGATTCACTGAGAGTCATCCAAGCTCTCAGTGGATCTCAGAATTTTTGCTCTGCCTCAAACCAGCCTACCAAACGTTTATTCTTTATGTGTGACTGGTTGGCTGCTTGTGGAACCAGTTTTGAGCT$ 

CAGAATGGAGCACGGCCTGGGGACCCTGCTCGACCACCTGTGGGCTGGCCATGGCCACCCGGGTGTCCAACCAGAACCGCTTCTGCCGACTGGAGACCCAGCGCCGCCTGTGCCTGTCCAGGCCCTGCCACCCTCCAGGGGTCGCA

 $\label{eq:condition} \textbf{ACTCGGGAACTGTATGGCCTTCAACAAGTCACTTTCCCTCTCTGGGCTTGCGGGCCTCATCTGTGAGGTATTTTGGGGACTCTTCCACCCTAGAATCGGCTGGTCTCTTCGGCTTGTTGGGTGTATCCTAATGACTTAGGAAGTTGG$ 

 $\label{eq:condition} \textbf{AGCTACCTAAACTTGAGATATGCCTTATGCTTTTGGTAATGAGTAAGAATCCCAGAATGTAAGTAGAAACACTACTCGTTGAATACATATGCCATGAAAGCATCAATAGAGAGGTGAGACTGTTTGGGAGGCCCAGGCATCAC$ 

 $\label{thm:condition} \begin{tabular}{l} GGGCATGCTGGGCTGTCCTGAAGCACCCAGAAAAGTTATGAGGAGGGGACAGTTAATGCCAGGTGACCCTGAGCCAGTCCTCATTGCTATGTTCAGAAGAGACAAAGGCAATGTTAGCATAGTGAATGTTGAACTGG\\ \begin{tabular}{l} TTGAACTGG\\ \end{tabular}$ 

 ${\tt TAGAGCAGTTTTGAAACACTCTTTTTGTTGAATTTCCAAATGGATATTTAGAGCATTTTGAGGCCTGTGGTAGTAAAGGAAATATCTTCATAGAAAAACTAGACAGAATTTTTCTGAGAAACTGCTTTTTGATGTGTGGGTTCAACT$ 

 $\label{eq:total} \textbf{ATATTTCTCATTCAGTCCCTCTCCCACAACTACCAGTGATAGTTGTTGATGTGATTAGTGACCTCTATGGCCTCTATGTCTACAGGTTATGTATATCTTTGTACAAAGCTGACTGTATACTGGGATGGAACTTTGGGATAGTGACTTTGTT$ 

 $\label{eq:gamma} \textbf{GGTGAAACAGGAAGTATCTTCACATAAAAAGTAGACAGAAGCATTCTCAGAAACTTCTTTGGGATGTGTGTATTCAAATCACAGAGCTGTACCATTCTTTTGATAGAGCAGTTTTTGAAACACTCCTTTTGTAGAATCTGTAACTGGA$ 

 $\label{thm:condition} TTGTTCAGGCCATAAGTCTAGGGGAATTATTCCTAGTTCTTTTTCCCTCGCCTCCATCAGCCAATTCAT\\ CAAGTCCTGTTGGTTCTGCCTCTAAAACACGCTTAACTCCTGATATCTCCTCCACTGCCTATTCCAGCC\\ TACAATACT$ 

 $\label{thm:condition} \textbf{GGTCTCGTCACATGCTTGTAAAGTAAGGACCTGAGCACTCTTCCCTGGATACAGCAAATGTTTAAGCCCCCTTCTATATGCCAGGTACTGACTCAGGTACTGCTGGTCTAGCAGGAAATAAGGCTTACAAAGCTTCTTCCCAGGAG$ 

 ${\tt AGTATAGGGAAGTTCTATGCATTGAAGTCCATTCACATGAGTGTGCTTTACTGCGTGCTGTAAATGTTTGAGACATTACTACCAATATTTTCTGCCATGTAACATGATGTTTACTTCCCAATAGCACAATTCTCCCCCTGT$ 

 $\label{totalagg} TTCCTGAAGCATAAAGAGGTCAGAAACTTTCACAAAGGCTTGCAGTCATGAAGCGGAAGGTCTGGGAGCTGATCCATAATTCCCATGGCTTTACGGGTTGTTCATTTCAGGAAGCTGCCCAATTTCCTTGTGGAAGAAGTGTCTGAA$ 

 $\label{thm:condition} {\tt GTGGAAAGCGGGGATAATAATAGTGCCCTCTTCATAGGACAGAAATCCTAACTGCCAGTGTGCACTGAGCTGAGCTCAGTGTCAGGGCATGTTCTTGGGGCTTGAGAGAAATTAATGCATTTAATCTTCATGGCCTTTTGGAGAGATGC$ 

TGCAAAGGCTCCTGCCTGCGTCCAGCCTATCCGCGGAGACTCCACGTGCACCCCCTCCTCATTGTCCT TGTCTAGGGCCGCGGCAAGGTCCTCGCTCCCATGGCATGGCTCCGGGGCACAGGAGCCTGGGCTGAGCA GGTGGAGTA

 ${\tt AAATAACTCGGACTCTGTAGGAGTTGGGAATGACCCTTAGGATGTCACCAGGCACCATGGGGAAGAGGGCCCTGGGGTAGATTAGGGATGTCTGCCATGAGCACCTGATGGAAGAAGCCACATGCAGGCCAAAGGGTATTTCCCTTTCC}$ 

 $\label{eq:colarct} \textbf{AGCCCAAACTGTAAACAGCCAGCAGTGGGAGACAAGTAAAACCTCTAGGTACTCACGCATAGTGACTGGCCACAGAGGAGAAGTGTGGGGAGGACTCACCATTGCCTTCATCTGCAGTGCCCCCACAGTTTGCCCTCCACAACTGG$ 

 $\label{thm:condition} \textbf{GGTCTAACTTGCCAATCCTCATGCCATTTCCCTGAGATAGGTCCTTCCATTGTCCCCACTTCATGGGTT\\ \textbf{TGGAAACTGAGGCACAGAGAGAGCGAATTGTTTACTTAACTCACACAGCTGGTAAGTGAAGAGACCAGAA\\ \textbf{TCCAAGCTG}$ 

AAACTGAATCAAAAGAAATCGAATGGAATGGAATAGAATAGAACAAAATGGACTCGAATGGAATGGACTGGAATCGAATCGAATCGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATCGAATGGAATCGAATGGAATCCA

 $\label{eq:ggtggctgcctgcctacacgttctcattatgtaaaacatatggacacaccatccttgaccctt} \\ \text{Ggcctgctttccccatagcgaggatctggatgagctgcactaccaggacacagattcagatgtgccgga} \\ \text{Gcagagga} \\$ 

 $\label{thm:constraint} {\tt CTCTGACCAGTTCTCTACAGAGCACGGGAAAGCCCCTCGGGGACGTCTTTCCTGCAGTGTGCAGCTGCCCCTTCCCCCTGCTCTTCCCAGTTGATGGGATGGTTGTTTTCTCTATGAAAAAAGGAGTTGGCACCTTG\\$ 

 $\label{thm:control} {\tt GTATGGAATGAAATGGAATGGAATGGAATCGAAATGGAATTGAATTGAAATGGAATCGAAATGGAATTGAATTGAATGGAATCGAATTGAA$ 

 $\label{thm:control} \textbf{TTTTTCGATTGAAAAAAATAGACTTTCTTGACACTTCAGAGCCATCATAGCACAATGGGAACCGGAGAGAGGGAAGGGGCGGAAGGGCAGAGACCCCAGCTGTACAATGCCCCTGGGTCTAGGCTTGAGCGAAGGTGTGGGAGTGGG$ 

 ${\tt CATTTATCCATTTAGGGAATGTACATAAGCACTCCCCTGTGCCATGCACTGTTTTGGGCAGTGGAGGTACAGCATGCACGGTCAGACATAGTTTCCAGATGAAGTAATATGTAAGGAGATTATGGAAGGATGAACAGGAAGTAGTTA}$ 

GACTCCCTGGCCCGGGCTCGCTCAAGGCCACAGCCACAGCCACAGGCATGGTTCTGGCTC CTACTGAGGGCCTCACACCTGAAGACTCAGCCAGAGGGGGCACCCGCCCAGCCCTGTAATTGGAGTCTG GGGTCGGGA

TATCCGCCAGCACCTGTTTGTCATTGTTGGGGGGCTATTCCTGCACTTCTAGCCTGTCCTCTGCACATGT CAAGCATGTTCCTTAAGCAGAGTGAGACCTGCTTACAGTAGGAAGCCGTAGGCACGCATGGAGAAGGTG AGTGTTGAG

 $A GATCTAGCTCCAGCAAATTTACCAACACAAATAGCTACAGTGTTCCTCACCTCCTAGGCCTGGATGTA\\ AACTCTGTGGCCCCTGGTTTGGTGGTTGCTGCTGCATCACCATGAAGTTAGGTGGCACATTTCCCTGTT\\ GAACCATAG\\$ 

 ${\tt CAGCCCACATCCTGTCGGTATTTGCTATTCTAGTAGAGTCCAGTGACTTCTCCTAGCAAACACTTGAATGTCTTCTGCCTGAGGGGTCTCTCTGGCTACAAGAGTGGGATCAGCCCACACATAGGGCAGAGGGGAAGTGGCAAGCAGT$ 

 ${\tt ATAATGAGAAACTGTGTGTTGTTGTTGTCTCTGCACTGTTAAGAAATTTCTGAGTGAAGCGTTGACATGCACCACAACGAATAGGTATGCCTTCATTTTCTACTGCATGAGGGTC}$ 

 $\tt CCTTCCAACTGAGTTCGGCTTCTCCTCTCCTGCCCCATAATCTACATACTACCTAGCAACTAGAGCTAT\\ CGTGCATTATCAAGTGTTACCCAGGTCAAATGTAAACTAGATTAATCCCCTGCTCAGGATGCTCCCATT\\ GCTTCACAT\\ \tt CCTTCACAT\\ \tt CC$ 

 ${\tt TCATAGGTATTACCCTCATGTTTCTGTGGGTCAGGAATATAGAAACTGCTTAGCTGGGTGGCTCTGGCTCTTGCCAGGGGTCAGGATCATCCAAAGGCTTGACTAGAGCCCCAGAGAATACAAGAGGGTTC$ 

 ${\tt TCATGTCACCTCTGCTCACCTAAGCTTACCTCCCTTGGGCCACTAAAACAGTGTTTCCAGTCTCATCTGGGGACCTTTACAGGGATCTAGCTTTACCCATCTCTTGGTACAATCTTCATGAGACCATGAGGCATCTCA$ 

 $\label{eq:condition} \textbf{ATGTGGGAGTTTCTCACATGTCCTTAAGAAGTAAGGAAGCCAGCTGTGCACTTTTCCACTGATATCTTC} \\ \textbf{CTGTGAGGGCTGCCGACTAGAAAAAGAATCTGTGGGAAGTGGTAGGTGGCATAAGTGTTGTGAAAAGAC} \\ \textbf{CCCACAGAC} \\ \\ \textbf{CCCACAGAC} \\ \\ \textbf{CCCACAGAC} \\ \textbf{CCCACAGACC} \\ \textbf{CCCACACACC} \\ \textbf{CCCACACACCC} \\ \textbf{CCCACACCCC} \\ \textbf{CCCACACCCC} \\ \textbf{CCCACA$ 

 $\tt CGGGACATACTGATCCCCTTGCAAGGTACTCTAGCTCACTTTAGTCTCCAGTAGTACTAACCCAGTTGGCACCTGCTACTCTCTTCTTCCTGCTGTTCACTCCCCTATGCTAAACTCACACCTGCTCCCTCATCCCTCCTTACCATG$ 

 $\tt CTGTCTTTTGGGGTCTCTCACCTGCAGTGCAAATGTGGCATGGGTAGTCAAGACTCCATTCTCCCAGGC\\ CAGCCTTGTTGAGCCTTAGGGGACTGGTTCACAATTGATCCTATGCTCCTTTTTGTCCCTTGCTGCCTAT\\ CTGTGAATA$ 

 $\label{total} TTCATTCTTTGAAATCACCCGGGGGTCCTGTTAAACATAGCTTTCCAGGCCTCTGCACCAAAAAGTCTA\\ ATTTATTAGAGCCAAAGCAAGACCTGAGGAATCTGTGTGTTTACGAAGCACCCCAGGAGATTCTTATGA\\ TCAGACAGG\\$ 

 $\label{eq:cagcond} $$GCAGGTCGGGGAACTGCTTTCAGGGAAGAGCCTCCCCTGCTGTGGGAGCTACTCAGGGCAGGTGGATAAGTGGAGGGCTAGGACTGCCTCTGGCCTTTCCTGGTACCCTGAGCAGCTGTTTCTCAGCACGGTGTCTTTGGA$ 

 ${\tt TAGTAATGTTTTTGCCATCCCAGACCCCACTCGGCAGGATTAGATAATCCATGGTAAGTGCTTCTGGGG}\\ {\tt TAAGCAGCCTCCAAGATGACCCCCGATGATCCCCTCTTCCTGGTATTTATGCCCTTGTACATAACTCTCCTGTGAAT}\\ {\tt CCTGTGAAT}\\ {\tt CCTGTGAA$ 

 $\label{eq:tottg} \textbf{GTTCTTGGAAATGAACGGTTAAGGACCACTCCTACCCCAAACTCCTCTTGTCACTTGTGAGATTTC} \\ \textbf{AGCTGTTGGTCTCACCTGCATTAGGAGGGCACTAAGATGATTCTTATCAGATCCATGTGGTTTTAAGGGAAAGGAGTG} \\ \textbf{AAAGGAGTG} \\$ 

 ${\tt AACTGGTCCTCTGGTTCACGTCTTTCCTCCTCTGGCTCATTTTGCCTCCTATCATGACCATATTATGTGCCAGATATATGGATGAGCTGGGGCACCTATGGCCTGTGTGGGCTAAAGGGCTCAAAGATTAGAGCCAAACAAGAT$ 

 ${\tt TATATGACTATCAAAGGTTATGTACAACGCACAACTCTACCCAGATACTCATCCTTGCACTGTTCTAAACTAAAGGAAACAAGACTCTTCAGTACTCTGTTTTTCAAACTGTAGGTCAAGATCTGTTAGTGAGTTGTAAAACTCAATTT$ 

 ${\tt CAGGTGATGTGCCCGAGTGAATCCTGGGGGCCCAGTGCTAAGAAGTAGAGGGAGATGAAGCCCTGCCCTCCTGGGGGAGCAACCAGGACCTTAATTCAGTCATTCCTTGGACCTACCCAGATTCCAGCCTCAGGCCCTGCCCA$ 

 ${\tt TGGTAGAGATGGGGTTTCTCCATGTTGGCCAGGCTGGTCTCGAACTCCTGACCTCAAGTGATCCACCAGCCCGGGCCTCCCACAGTGCTGGGATTACAGGTGTGAGCCACCACGCCTGGCTAGAAAAATGCCTCATTTTAAAAATGT$ 

 ${\tt GTTAGTAAGCCTCGGCTTGTCACCTGCTTGCAAAGGGTATAGACATCATTCTGGGTAGTTCTAGAGGATATCGCAACAAGTGCGTTTGAAGGTTCAGCACAGCTGGAATTGTACGGTAGTGAGCTCTTCAAAATGAAAACAGAATGA$ 

 $\tt CACACACACACACGCCAAACACAGCCCCTCTGCAGCTCTGCTGTCTGCCTCAGGTGGGGGGCCATGCTGGGGTGAAACTGTCATTTCTCCCTGTCTATAAGCTCCTGCCTTGAGGCTATGAAGACAAGAGGATGTGAACTGCTC$ 

 $\label{thm:condition} ATAGATGGTAGTGAAAAGACTCAATAATATGCACGTGTGCCATTTTGTCAACATGCGTGTGCTCGGGTACATCCCTTGGTTGTTTTACACAATGCAAGAGTGGGTCATCCCAGAAGTGGGGCTGCACAATTGGAGAGAGCTTTTG$ 

 $\label{eq:control} \textbf{AGGATTTCGTTCTTAATTTCAATTAAAATAACCACACGTGGCTAATGGCTACCATATTCGACAGCACAGCTCTACCCTTTTAACACATGGATAACTTACCATACGGGATTACTTTACCATAGGATAAGTAATGGTGGATATTCTGAG$ 

 ${\tt CTTTATGGTGCAGAGGACAGCAAGAAAGAGGTCAAACTCTAAGAAAAGACAGAGGTAAACAGTGGCGGGAGTCACCAGGGCCAGGAGGGATGTGGCTCCCGTGGAATGGGCTGAGCCACGGACATTAAGGGTAGCTGC\\$ 

 ${\tt GAAGAAGTCAGAGGGCAGAATGGAATTGCAGATCCATGCAGTAGGGGGGTGGCATGTGTGAGGGGGGTCCCCAGCCTTGGGGTTTGCTGGGTGTGCAGCCCTTCTCCCACTTTCCAGCCATGGAGCCCAAGCATGTTGCCCCATCTGT$ 

 $\label{thm:condition} \textbf{GGCTGGCATCTCACTGGGGTCAAGCTGAGGTACCAGCAGGATGTCAAATGGATTTTCCTATGTCCTGCT} \\ \textbf{GCTTGTTCCAGAGGCCAAGTGCCCAATAGGCTTGGCCTCAATTTTCTGAGACCCATGAAGATGACAGCA} \\ \textbf{TCCCTGTGG} \\$ 

GATTGGAAGTGAAGGGTCAGTTTTGCAGTATTACATAGGGGGGTCAGGGTCAGCCCCATGAGGAGGT GAAGCTCAGCAAAGATGTGAAGGAGCTGAGGGAGTGACCCCTGCTGAAATCTGGGGGGAAAGTGTCCCA GGCATAGGG

 $\label{thm:constraint} TTAAGGACTCTCCCATGGGCATTAATTCATAGCACTTCTTGGCCTTGTCTTGTCTAGCCAGTGATGCCCAGAAAACCAGAGAAAGCCTCAGAGTGCAATGGGAAGGTGAATGCTGAAGGGATATTGGCAAAAAATAGACAGTGTCT$ 

AAGGGAGGAGTATAGAGAGCAGGGTTTCAGCCATATGGGGCAAAGAGGAAGACTCCAGATTCCACTGTT
ATTTATGGCCATGGCTGTTCTCTTAGCAGACCGTAAGAATCCACAACACATGCACTAAGAACAGCCAGA
AACATTGAA

 $\label{totagg} TTCTAAGGCTTCAGAGTAGCAATATCTAGTCTAGGGATTGCTGTTCTTCAGATGCACACCTTTTCTGTT\\ ATCCCTGAATGTTGGTAAAATCATGTGAAACTTCACAGTGTGGGTTCAGTCTTGCTGTGGGGAGGAAGGGAAGGGAAA$ 

## II. Listed below are 2,300 nucleosome-inhibiting DNA sequences

 ${\tt TATTACTCAACAGGTGATTTGGCCATTCCCCCCCAAAAATATTTCCTATGAATTGTAACAAAAAGGTATTTACAAAATGTGATTTTGCTACCTCTAATTTTAACATATCAGGCACTTCAGAACATCTAAAAAGAAGAGAGACATTTCAA$ 

 $\label{eq:adactacca} \textbf{ATCAAGCTACCAATGACTTCACAGAATTGGAAAAAAACTACTTTAAAGTTCATATGGAACCAAAAAGGAGCCCACATTGCCAAGTCAATCCTAAGCCAAAAGAACAAAGCTGGAGGCATCACGCTACCTGACTTCAAACTATAC$ 

 $\tt CTTCAATATGTTGATTTCTTTTCTATTGGAAATATACCCAGCAGTGGGATTCCTGGATCATATGGTAGC$   $\tt TCCATTTTTAGTTTGTTAAGGAATCTCCAAACTCTTCTCCATAATGGTTGTACTAATTTACATTCCCAC$   $\tt CAACAGTGT$ 

 $\label{thm:condition} {\tt GACAGAGTCTTGCTCTGTCACCCAGGCTGGAGTGCAGTGCAGCTCAGGCTCACCTGCAACCTCCGCCTCCCAGGTTCAGGTTGAGTTCTCCTGTCTCAGCCTCTCGAGTAGCTGGGATTACAGGCATGTGCCGCCATGCCGGCTAA$ 

TCAGGCCTGGGTGACAGAGCAAGACTCTGTCTCAAAAAAACAAAACAAAACAAAAACAAAAATGTAGCA TGTAACCATAGATATCATATAAGAATGTCTGAGTTATGCAGGATAGTCAGCTGGAAAATTAGTTACAAG AGAACACA

 $\label{thm:capaca} \textbf{GTTCAATATCACACAATCAATAAATGTAATCCAGCATATAAACAGAGCCAAAGACAGAAACCACATGAT\\ \textbf{TATCTCAATAGATGCAGAAAAGGTCTTTGACAAAATTCAACAACCCTTCATGCTAAAAAACTCTCAATAA\\ \textbf{ATTAGGTAC} \\$ 

 $\label{thm:coactata} TTTCCAACTATAACACTGATGCATGTTTATTGAGAGAAAATATAGAATAGTATAAAGAAGTAAAATGTG$  TCAAATTTTACTATCCAGAAATAACCACTATTAATACTTGTTTTACATCCCTATAGGGGATTTTAGAGA CTTTAAATA

TAGATTAAATCAGGAAGATATAGAAACTCTGAAGAGACCAATAAAAAAGCAATAAAATTGAGTCAGTAA
TTTAAAAATTGCCAAAAGAAAAAAGCAATTCTGGAACCTGACAGATTCACAGGTGAATTCTACCAGACA
TTCAAAGAA

 $\label{eq:aact} \textbf{AACTTAATTACATTTGCAAAGACTATTTTTCAAAATAAGGTAACATTCACAGATTCCAGATTTTGACATGGACATGTATTTTTGGGAGTCACCATTCAACCTACTACAATGTCCCTCTGAAGTTTCTGGTCAATTTTTCATTAATCT$ 

 $\label{thm:constraint} \textbf{TGAGGCCTTCATTGGAAATCGGGATATCTTCACAAAACTAGACAGAAGCATTATCAGAAACTACCTTGT}\\ \textbf{GATGTGTTCACTCAACTCACAGAGTTGAACGGTTGTTTTGATGAAGCAGTTTTTGAAACACTCTTTTTGT}\\ \textbf{AGGATCTGC} \\$ 

 $\tt CCCAGCAATTTGGGAGGGCGAGGTGGGTGGATCACTTGAGGCCAGGAGTTCAAGACCAGGCTGGCCAACATGATGAAAACCCCATCTCCACTAAAAAATAAGAAAATTAGCCAGGTGTGGTGGCACACACCTGTAATCCCAGTTACTCT$ 

 ${\tt TAATCCCAGCTACACAGGATGCTGAGGCACAAGAATTGCCTGAACCCAGGAGGTGGACGTTGCAGTGAGCCGAGATCGCACCACTGCACTCCAGCCTGTGCGACAGAGTGAGACTCTGTCTCAAAAAATAATAGTAATAATAATAAGA$ 

ATTATTATTATTATTTATATAGAGATGGGTCTTGTTATGTCACCCAGGCTGGTCTCAAACTCCTGG CCTCAAGCGATCCACATGGTGTGAGCCACCATGCCCAGCCTGCTGGTTTTTAAAGAGCATATTTAAATG AAAGAGAC

 ${\tt GAACAGACACTTCTCAAAAGAAGACACTTTATGCAGCCAAAAAACACATGAGAAAATGCTCATCATCACT}\\ {\tt GGCCATCAGAGAAATGCAAAACCACAATGAGATACCATCTCACACCAGTTAGAATGGCAATCAT}\\ {\tt TAAAAAGTC}\\$ 

 $\label{thm:condition} \begin{tabular}{l} $\operatorname{GGAGTTCGAGATCAGACAAAAAATCAAAAAACTAGCCGGTTGTG} \\ $\operatorname{GTGGCGCACACCTGTGGTCCCAGCTACTTGGGAGGCTGAGGAGGATTTCATGAGCCCAGGAGGTT} \\ $\operatorname{GAGGCTGCT}$ \end{tabular}$ 

 $\label{eq:constraint} \textbf{ACTGACAGTGTAATTCCCCAATAATTAAACTAAAGGTATAATTTCCAAATCACTTTTAGTAACACAATAAATTCTAACTTTTTTTAAAAATAGAGATGGGGGTCTCACTATGTTGGCCAAATTGGTCTTCAGCTCCTGGGCTCAAG$ 

 ${\tt CACTGTAACCTCCACCTCCCGGGTTCAAGCGATTCTCCTGCCTCAGGCTCCTAAGTAGCTGGAATTACA} \\ {\tt ACTGTGTGCCACCATGCCCGGCTAATTTTTGTATTTTTAATAGAGACAGGGCTTCACCATGTTGGCCAGGCCTGGTCTC} \\ {\tt GCTGGTCTC} \\ \\ {\tt CCTGGTCTC} \\ \\ {\tt CCTGGTCTC} \\ {\tt CCTGTCTC} \\ {\tt CCTGT$ 

 $\label{thm:condition} \textbf{GGAGGTGAGACTGCAGTGAGCCAGAGATCATGCCACTCCAGCCTAAGCAACAGAGCAAGATTCAGCAAAAAAACGAAAATAGAAATCCCAGAAGGTGAGAGAAAAGGAGAAATCAGAAAGGGTTTTTCTTCATTGAAG$ 

 $\label{eq:attagcattaaaatattaatattaatattaaattaaagatgtgcattgattttaaacatataatccaaacataacttaatcgactacagaaaccaaaaaaccataacctgattaatcgactacagaaaccaaaaaaacctg$ 

 $\label{topological} TGAAAAGAAAATTAATAGAAAAAAATCACTGAAAACAAAAGGTAGTTCTTGGAAAAGATTAAAACTGA\\ TCAGCCTCTAGTTAGGCTAAATAAGGAAAAAAGAGAGAATAAATTACTAATATCAGAAATAAAAGCAAG\\ ATATTACTA$ 

AAGGAAACCTAGAAAAAATTATTCTGGATATTGGCCTAGGCAAAGAATTTATAACCAAGACCTCAAAA GCATATGCGACAGAAACAAAAATAGACAAATGGAATTATATCAAGCTAAAAATATTCTGCACATCAAAA GAAACAATC

 $\label{eq:GAGTACAATGGCACCATCTCAGCTCACTGCAACCTTCGCCTCCAGGGTTCAAGCAATTCTTATGCCTCAACCTCCCAAGTAGCTGGGATTACAGGCATGCGCCACCACCACACCTAGCTAATTTTTGTATTTTAATAGAGACATGGCTT$ 

 ${\tt TTTTCAACAACTAGTTCTTGCAGGAAATAAGAGTGAGAATTCACTCTCTCCTTCGAGAATGGCACCAAAAATTCATGAAGGATCCGCCCCCATGATCCAAACACTTCCTACCAGGCCCACCTCCAACACTGAGGATCAAATTTCAA$ 

 ${\tt TATATAACAAATGTTATAGTTTTCTTCTAATTAGGTCTTGAGGTCTCTCAGGAGAATGGCTATAAACTCTACCTCACTCTAATGGGGCTCTTAGGGGGGGCCTGTGGGTCTTTAGAGTAGCCTTTCACTGGACATTTCTTTTTCCTT$ 

 ${\tt GAATTTCACTTTGTAATGTACTTAAGGTTGTTTTAATATTGAAACAATGTTATTTTTAGTTTATTTTTC}\\ {\tt TAGATGAAGTCTCACTCTGTCGCCCAGGCTGGAGTACATTGGTGCGATCTCGATCTTGGCTCACTGCAACCCTCCACCT}\\ {\tt CCTCCACCT}\\ {\tt CCTCCA$ 

 $\label{thm:control} TTCTTACATATTTCTATGGGCATTGAAAATTTCTAAAAGAGCAGCTCTCAGAAATCACAAAATTTAT\\ AAAAGAATAAAGGAATAATTCAGTGATTTATGGAAGCCATGCTGCAAATAATTAAAGACAAAACCTAGG\\ CATTACCAT$ 

ACAAAAAAGGGATTTTAGACCAATATCCTTGATGAACATTGATGCAAAAAATCCTCAATAAAATGCTG GCAAACTGAATCCAGCAGCACCAAAAAGCTTATCCACCATGATCAAGTGGGCTTCATCCCCAGGATG CAAGGCTAG

 $\tt CGGGCTCTTTTTTGGTTCCATATGAACTTTAAAGTAGTTTTTTCCAATTCTGTGAAGAAAGTCATTGGT\\ AGCTTGATGGGGATGGCATTGCATCTATAAATAACCTTGGGCAGTATGGCCATTTTCACAATATTGATT\\ CTTCCTACC$ 

 ${\tt CCAGGTTCAAGCGATTCTCCTGCCTCAGCCTCCTAAGTAGCTGGAACTATAGGCGCCTGCCACCACCCTGGCCTAATTTTTTGTATTTTTAGTAGAAGCAGGGTTTCACCATGTTGGCCAGGTTGGTCTGGAACTCCTGACCTCAAGT$ 

 ${\tt ATATATATATATATATATATATATATATATATAAAATAACAAGAGACAAAAGGACATTGGTCTAGAGTT\\ {\tt TGATGATGTTCCTGTCTTGTCATTGAGTGGAGAAACACTAGACAAATCATTTAATCTTTCTGTGCCT\\ {\tt CTATTCCTT}\\$ 

AACAAGGAGAAACCCCGTCTCTACTAAAAATACAAAAAATTAGCCGGGCATGGTGGTGCATGCCTGTAATTCCAGCTACTTGGGAGGCTGAGGCAGAAGAATCACTTGAACCTGGGAGGCGAAGGTTGCAGTGAGCCGAGGTCGTGC

 $\label{totaca} \textbf{TCTCTACTAAAAATACAAAAAGTAGCCAGGCATGGTGGTGTACATCTGTGATCTCAGCTACTCAAGAGGCTGAGGCACGAGAATCGCTTGAACCTGGGATGCAGAGGTTGCAGTGAGCTGAGATCATCCCACTGCACTCCAGCCTGG$ 

 $\label{thm:control} TCTTTTTATGATAATGTAGGCTGATGGTCCAGTGGCTGGAGAGGACAAGTGGAAGCAGATAGAGAGACCGGAGTCATGCTAAGCCAGTATAATGACCTTTGTAGGATGGAGAAGGAAATTGGAGAGACCCTGCATTTAATGACAGG$ 

 ${\tt TCTGTCTAGTGCTGTCAGTGGAGTACAGAAGTCCCCCACTATTATTGTGTTGCTGTCCATCTCATTTCT}\\ {\tt TAGGTCTATTAGTAATCGTTTTATAAATTTGGGAGCTCCAGTGTCAGGTGCATATATGTTTAGGATAGT}\\ {\tt GATATTTC}\\$ 

 ${\tt TATATATATCCTCTTTTTTATTATTTTTTTTGAGACAGAGTCTCTGTCACCCAGGCTGAAGTGCAGTGCAGGCACAATCATACCTCACTGTAGTTTTGACCTCCCGAACTCAAGTGATCCTCCCACCTCAGCCTCCCGAGTAGATG$ 

AGAGAAGCTAGCCATAAAAATAAAAGGTGAGGCACGGTGGCTCACACCTGTAATCCCCGCACTTTGGGAGCTGAGGTGGGCGAGATCACCTGAGGTCAGGAGTTCAAGACCAGCCTGGCCAACACGGTGAAACCCCGACACTACTAA

 $\label{thm:constraint} \textbf{TGGCAGGCAAGTGAGAATTACCACCCGAGCTCCACCTCCTATCAGATCAGCGGCAGTATCAGATTCTCATAGGAGCACCACCTATTGTGAACTGCTCATGTGAGGGATCTGGGTTGCACTCTCCTTATAAGAATCTAATGCCTGA$ 

 ${\tt TAAAATTGGTGAGATGTTCCTTGGGCTGCTTGGTCTGAGGACCCGAGGTCATAGGTGGATCTTTCTCACAGGGCAAAGAGCAGGGAGGACAGGGGATTGATCTCCCAAGGGAGGTCCCCCGATCAGAGTCATGGCACCAAATGTCACG$ 

CCTCAATAAAATACTGGCAAACAGAATCCAGCAGCACATCAAAAAAGCTTATCCACCATGATCAAGTGGG CTTCATCCCTGGGATGCAAGTCTGGTTCAACATATGCAAATCAATAAATGTAATCCAGCATATAAACAG AACCAAAGA

 $\tt CTTGAACTCCTGACCTCAAGTGATTTGCCCGCCTTGCCTCCCAAAGTGCTGGGATTACAGGCGTGAGCC$   $\tt ACCACGCCCGGCTGGAAGACTTAATTTGTGGGTGACTAATCATAATGCTTAAATGAAGAAAAAGACAATA$   $\tt AAATTCAAT$ 

 $\label{eq:ccccc} \textbf{GCGCCTATCACCACGCCGGCTAATTTTTGTATTTTAGTAAAGACAAGGTTTCACCATGTCGGTCAGGCTGGGTCTCGAACTCCTGACCTCAGGCAATCCACCCGCCTCAGCCTCCCAAAATGCTGGGATTACAGGTGTGAGCCACCC$ 

 ${\tt CGTGAGGTCAGGAGTTCAAGACCATCCTGGCCAACATGGCAAAACACCATCTCTACTAAAAATACAAAA}\\ {\tt AGTAGCCAGGTGTGGTGGTGCCTGTAATCCAAGCTACTTGGGAGGCTGAGGCAGGAGAATTGCTTGAACCTGGG}\\ {\tt GAACCTGGG}\\$ 

 ${\tt AATCCAGCATATAAACAGAACCAAAGATAAAAACCACATGATTATCTCAATAGATGCAGAAAAGGCCTT}\\ {\tt TGACAAAATTCAACAACCCTTCATGCTAAAAAACTCTCAACTCACTTTTTTAGAAACTCCACTGCCTATC}\\ {\tt CCAGCAATT}\\$ 

 ${\tt TTGGTTATTGTTGATATTTAATATGTATGAATTCTCTTAATTTTTGAGTTATACATAATATCTTAAATTC} \\ {\tt AGACACTTTTCTGGACTATCACAATAGTAGTTTTAAGAATAATACTTTTAAGAAATGTATATAGTTGTC} \\ {\tt TTAATAGAT} \\$ 

 ${\tt TCTGTCTTGGAGAATGTTCCATGTGCTGATGAAGAGAATGTATATTATGAAGTTTTTGGGTAGAGTGTTCTTGTTAAAATCTGTTAGGTTCATTTGTTGGAAGGTATAGTTTAAGCCCATTTTCTCTTTTGTTGACTTTCTTGTTGACTTTCTTGGCTTGAT$ 

 ${\tt CAGGGGTTCGAGATCAGCCTAGCCAATATGGTGAAACCCTGTCTCCACTAAAAATACAAAAATTAGCCAGGGCTGGGTGTGGTGGCTCACCCCTGTAATCCCAACACTTTGGGAGTCCGAGGTGGTTTGGATCACCTGAGGTAAGGA}$ 

 ${\tt ATCTCAAAGAAAAAAGACAATCAATTGATGCCTACACTGAGATTATAGAGATATTAAAATGATCTGACA} \\ {\tt AAGATTTTAAAGCAGTCATTAGACAAATGCTTCAGTAAGCAATTATGAACGTACTTAAAAAAAGGTTTTT} \\ {\tt AAAAAAGAT} \\$ 

 $\label{eq:condition} \textbf{AGGCATATGCCACCACCACGCTAATTTTTGTATTTTTAGTAGAGATGGGGTTTTACTATGTTGGCCAGGCTGGTCTTGAACTCCTGACCTCAAGTGATCTACCCACCACAGCCTCCCAAAGTGCTGGGATTACAGGCAGTGAGCCA$ 

TCTGCCTGACAACCGCCCGTCTGAGAAGTGAGGAGCCCCTCCGCCGGCAGCCGCCCGTCTGAGAAG TGAGGAGCCCCTCCGCCTGGCAGCCCCCGTCTGAGAAGCGAGGAGCCCCTCCGCCCGGCAGCCACCC CGTCTGGGA

 $\label{eq:total} \textbf{ATCTTGGTGGGTGTACTAGTCCATTCTCACATTGCTTTAAAGCGATACCTGAGACTGGGTGATTTATAAAGAAAAGAGCCTGTTCCACAGGCTGTACAGGAAGCATGATGCTGGCATCGGCTCAAGAAGCTCACAATCATGGCAGAA$ 

 $\label{eq:control} \textbf{ACTAAATGCCTTTTAGGTGTTTATTAATACAATTACATCATTTTTCTCTTCTTATTTGTTAGAGAAGGTTATGGTATCCTAGAATCAGAAGAAAAAGTCAAGAAGGAAAGAGGAAAGAGGCACCTTTATATAAAAAATATAAAGCCTGGC$ 

 $\label{eq:transform} \textbf{GTTGAAGATTTTTTAACTTCTAAGATCAACTTCCTTTGCCAAGAGAAGAAGAATTTTTTTAATCTCTCAAGAAGAAATTTGGGAAGGCTCTTCCGTGTAATTTGGCAACATCTAACAAAATTTAAAATGCATAGACCTTTTAACTCA$ 

 ${\tt GAAAACCCCATTGTCTCAGCCCAAAATCTCCTTAAGCTGATAAGCAACTTCAGCAAAGTCTCAGGATACAAAATCAACGTACAAAAAATCACAAGCATTCTTCTACAGCAATAATAGACAAACAGAGAGCCAAATCATGAGTGAACTC}$ 

TTAGAATCAACTCAAATGCACATCAACAGATGAATGGATAAACAAATTAGATAGTTAGAAGGAATAAGA TCTAATGCTCAGTAGCACAATAGGGTGACTACATTTAACAATAATTTATTGTATATTTCAAATTACTAG AAGAGTGAA

 $\label{thm:condition} {\tt GTAGCTGGGATTACAGGCGTGGCCACCACGCCTGGCTACTTTTTTGTATTTTTAGTAGAGGCGAGGTTTCACCATGTTGGCCAGGCTGGTCTCGAACTCCTGGCCTCAAGTGATTCACCCGCCTTGGCCTCCCAAAGTGCTGAGATTGCAGATTGCTGAGATTGCAGATTGCTGAGATTGCTGAGATTGCAGATTGAGATTGAGATTGCAGATTGAGATTGAGATTGAGATTGAGATTGAGATTGAGATTGAGATTGAGATTGAGATTGAGATTGAGATTGAGATTGAGATTGAGATTGAGATTGAGATGAGATT$ 

 $\label{thm:condition} \textbf{TGGCGCGATTCTCGGCTCAGCCTCCCGGGTTCACGCCATTCTCCTGCCTCAGCCTCCCGAGTAGTCTGGGGACTACAGGCGCCCACTACGCCCGGCTAATTTTTTGTATTTTTAGTAGAGACGGGGTTCACCGTG$ 

GACATAATTTCAGACTTATAGAAAAGTACGATAGTCTAGTATCTAGACTATATAAAGAGCTCCAAATTT CAATAACAACCCAAAAAATCAATTTGAAAATGGGCAAAAAAACTTGAACAGACTCAAATAAACATTTCTA CCAAAAAGA

 ${\tt CCAAAAATACCTTCCAGCACTACAAACTAGAAGAAAAAAGAGACATGGATACCAAATTAAGTTCTTAATAATGAAGAATAAAAGAGACTACCTTGCCTGCTCCAGTGGATCCAGCAACCACCAACAGCTGTCCTCTTCCTTTCTTCA$ 

 ${\tt TAAACATCAGCTTAAGTAAAAACGTCTTGAAGACACTTTCCTGCTTACCTTCCAAGCATAGCGTCGCAAACTCCTTCTCAGAGGAAAGTCTCGGCCCTCACTGGTGGGCAAGTCCAGGCGGCCCCCCAAGCTCCCTTCGGGGTTCAT$ 

 $\label{eq:attacc} \textbf{ATCACTTCCCCTAATGTTAACAATTTACATGACCATAGTAAAATTATCAGAACCAGGAAATCAACATTGACCAGTACCATTAACTAAACTACAGATCTTATTAAAATATTGCCAAATCTCCCATGGATGTCTGTTTTCTGGCCTAG$ 

GTAATGTTAAGTACATAGAAAAAACACAGAATATTATAACACTGTAATTGTGGTGTTTAAACTCATCTT
AAGTAGAAACACTAAAAGATGAATAAATCAAAAAATAATAACTATAATACAACAACTTTTCAAGACATAA
GCAGTACAA

 ${\tt CCATGCTGTTTTGGTTACTGTAGCCTTGTAGTATAGTTTGAAGTCAGGTAGCATGATGCCTCCAGCTTTGTTCATTTGGCTTAGGATTGACTTTGGCAATGTGGCAATGTGGCCTCTTTTTTTGGTTCCATATGAACTTTAAAGTAGTTTTTTCCAA}$ 

 ${\tt TCTCTGTATTTCCTGAATTTGAATGTTGACCTGCCTTGCTAGGTTGGGGAAGTTCTCCTGGATAATATCCTGAAGAGTGTTTTCCAACTTGGTTCCATCTCTCCCCATCACTTTCAGGTATACCAATCAAATGTAGATTTGGTCTTTTT$ 

 ${\tt CATAAGGTCAGGAGATTGAGACCATCCTGGCCAACATGGTGAAACCCTTTCTGTACTAAAATACAAAAAATTAGCTGGGCATGGTGGTGCGCATGCCTGTATTCCCAGCTACTCTGGAAACTGAGGCAGGGGAATCGCTTGACCCTG}\\$ 

 ${\tt ATAAGAGTAAGTCGGCCAGGCGGGGGGGCTCACGCCTGTAATCCCAACACTTTGGGAAGCCAAGGTGGGCTGATCACCTGAGGGTCAGGAGTTGGAGACCAGCCTGCCCAACATGGTGAAACCCTGTCTCTACTAAATACAAAAAAA$ 

 ${\tt TCTTGCATGAGATGCTGAAGCCCTGGTACAGGCCCTGGGTCCATTGGATTTGGTGATCCTCACCGGCCAGGCTCCCCAGGTCTTTGAACTCATGCACTGTGCCCAATTTCCCAATGTCTGCTGCCAGGAGGTTCTGGGAAATCCAGGG$ 

GGCTGCTTTCTCCCACTAGAAAGCCCACTCCATGGAGTGGGAGAGCCCCTGTCACATCCGCTGCTGTCT CCAGTGGACAGCAGGGTACCTGGCCACAGCCTTGGAGGTATTGGGTGCTGGGGGCACCTCGGTTGAATA AATGCATGA

TCTAAAACTATTCAGCAAAAGTTTGAGGACAAACAGGATATTTGCAGACTCAAGTATGTCCCCCAAAAT GTTTATTAATTACAAAGAGAAATATAGTAATTTCAGAGCAGGCAAATCCAAGAGACACCACCTTAACTA GGTGATCAA

 $\label{eq:condition} \textbf{AGTCAGTGTGGTGATTCCTCAGGGATCTAGAACAAGAAATACCATTTGACCCAGCCATCCCATTACTGGGTATACACCCAAAGGACTATAAATCATGCTGCTATAAAGACACATGCACACGTATGTTGATTGCGGCATTATTCACAA$ 

 ${\tt TATCTTCTTGATGGTTTCACCCTGTTATTATCAAATATCCCTATTTTGCTCTGATAACAGTTTTTGTTT\\ {\tt TAAAGTCTCTCCAGCTTTTTTGGCTGGGTGGTGGTGGTCATGCCTGTAATCCCAGCACTTTGAGAGGC\\ {\tt CAAGGCAGG} \\$ 

 ${\tt TGCCTGTAATCCCACTACTTGGGAGGCTGAGGCAGAGATCACTTAAACCTGAAAGGCAGAGGTTGCAGGCGAGGCCAAGATCATGCCATTGCACTCCAGCCTGGGCGACAGAGCGAAACTCCGTCTCGAATAGAAT$ 

 ${\tt CATGTTATAACCTTACTTCAGCCTCCGAGTAGCTGGGATTACAGGCATGCGCCACCACGCCTGGCTAACTTTGTATTTTTAGTAGAGACGGGGTTTCTCCATGTTGGTCAGGCTGGTCTCGAACTCCCAACCTCCGGTGACCCGCT$ 

 ${\tt GAGGAAATGTGCATTGGTACAGCCACTATGGAGAACTCTACGGTGGTTCCTTAATAAATTGAAAACAGAACTACTATATGATCCAGCAATCCCACTTCTGGGCATATATCCACAGGGAAATGAACTCAGTATCTCAAAGAGTTATCT$ 

ACGTCTGATTGGTGTACCTGAAAGTGATGTGGAGAATGGAACCAAGTTGGAAAACACTCTGCAGGATAT TATCCAGGAGAACTTCCCCAATCTAGCAAGGCAGGCCAACGTTCAGATTCAGGAAATACAGAGAACGCC ACAAGATA

 ${\tt TAAAAAGAGTCCAGGACCAGATGGATTCACAGCCGAATTCTACCAGAGGCACAAGGAGGAACTGGTACC} \\ {\tt ATTCCTTCTGAAACTATTCCAGTCAATAGAAAAAGAGGGAATCCTCCCTAACTCATTTTATGAGGCCAGCATCATCCT} \\ {\tt CATCATCCT} \\ {\tt CATCATCC$ 

 $\label{thm:condition} \textbf{TGTATTTTAGTAGAGATGGGGTTTCACTGTGTTGTCCAGGCTGGTCTCAAACACCTGGCCTCAAGTGACCCTGGCCTCAAAGTGTTGGGATTACAGGCATGAGCCACCATGCCCAAAATATTACTTTTTT$ 

 $\tt CGGGTGGATCACTTGAGGTCAGGAATTCGAAACCACCCTGGCCAACATGACAAAAACCCCATCTCTACTAAAAATACAAAAATTAGCCAGGTGTGATGGCTCACGTAGTCCCAGCTACTCGGGAGACTGAGGCACAAGAATCGCTTG$ 

 ${\tt CAAGAATTGAGTGAAGACAAGTGGAAATATGGAAGCAGGGGGTAATATGGTGAATAGTTGTCTTGGATAAGCTTGTCAATGATCATATCATTTTCCCTAAAAGAAATCAAGCCTTTAATTACTTTATATTATATAAATTTGT$ 

 $AATTTTAAAAATTAGTTGCTTATGTTAAAAACTTATGAGATTTTACACAAAATGTTGGATCTCCAGCT\\ TATTTTGAAAATGTGAAAGATCTGGCTACAGTAGACCTACATTATTGGTTAATGGTTGTCTGGAGCTGA\\ GTGGCAGCT$ 

 ${\tt GCGTGGTGACGGGTGCCTGTAGTGCCAGCTACTTGGGAGGCTGAGGCAGGAGAATCACTTGAACCTGGGAGGCAGGAGGCTGCAGTGAACCAAGATCGCACCACTGCACTCCAGCCTGGGCTACAGAGTGAGACTCTATCTCAAAAAA$ 

 ${\tt TATTTGAACCCAGCTCTAATTTAGGAAGTTCTCTTTTTTCTTTTAGAAATTAAGGCATAAAGTGTCACGTGACTTGCACAAGATTGCACCACTAGTAAACTTAAAAATTATGTTTACTTGCCTACTGTCTCAATGTTTTAGTGATTT$ 

 $AAGATCTGAAATCAACATCTTAACATCATAACTAAAAGAACTAGAGAAACAAGAGCAAACAGACCCCAA\\ AGCTAGCAGAAGAACAAGAAATAACTGAGATCAGAGTAGAACTGGAGACAGAGACATGGAAAAACCTTCA\\ AAAATCAAT\\$ 

 $\tt CCCCTAAGGATTTCCACCTAATATGTGTGTGTTTTGGGGGATTGATGGAAAGGGGACAATAATTCAAATA$   $\tt ATTACACAATAACATAATACGTGTCATAACTTCTTAAGAGTGACAGTTTGTGACGCCAATCAAAACTCA$   $\tt GTTTGGAGA$ 

 ${\tt TATCTAAAAGAAGATATTATAAATATTGTTTCTGAAGCAACATATACCTTTGATGTGCTAAGAGGAAAATGAAAATTGTTTCTAAAGTGAAGATAATGTAGGTTTCTAAGTGAAAATAATGCATAAACATGTTTTATATTCGCTTTCA$ 

 ${\tt TCTAAAACACCTTTTTTTTTTTTTTTTTGAGACGGAGTCTCACTGTGTTGCCCAGGCTGGAGTGCAGTGGCACCATCTCGGCTCACTGTAAGCTCCGCCTCCCGAGTTCACACCATTCTCCTGCCTCAGCCTCCCGAGTAGCTGGGAC$ 

 $\label{thm:control} \textbf{TGCATGAATCTGTCTTAATGCCCTGGGAGATAATATGGGTGCTAATGTTTAAGAACTGAGGCTTCTTAA\\ \textbf{ATTCTCAGTTGCTGAATGTAAGCAGGGAAAAGCAATGCAAGAAATACCTGGATTTGGGGGATATAAAAC\\ \textbf{TCACTGTGG}$ 

 $\label{eq:ggg} \textbf{GGGGTTGCTGCTAAGAAACTCTGGGAAGATGTGCTCTCTGCCCAATGGGGTTGCTGCTAAGAAACTCTGGGAAGATGTGCTCTCTGCCCAATGGGGTTGCTGCTAAGAAACTCTGGGAAGATGTGCTCTCTGCCCAATGCGGTTGCT\\$ 

 ${\tt CATCATTTCAAGAAAGAAATTAATCCAGTAAACAGTCATACCTGAAGTATATCAAAAGAGAGTTTTTCT}\\ {\tt TCTTAAAATGGTTGGGGAGGGAATACTAAAACCTAAAGAACTTAGTCTCTCAGAGCTCATCTATTAGTT}\\ {\tt GTATATTTG}\\$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} $ACCTGTAATCTCAGCACTTTGGAAGGCAAAGGCAAGGTGGAGTCACCTGAGGTCAGAAAACTCAAAAAATTATCCGAGTGTGGTACACACGTGTAATCCCCCTGTCTCTACTAAAAAACTCAAAAAATTATCCGAGTGTGGTAACACACGTGTAATCCCCCTGTAATCCCCCTGTCTCTACTAAAAAACTCAAAAAATTATCCGAGTGTGGTAACACACGTGTAATCCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCTGTAATCCCCCTGTAATCCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCCTGTAATCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCCTGTAATCCCTGTAATCCCTGTAATCCCTGTAATCCCTGTAATCCCTGTAATCCCTGTAATCCCTGTAATCCCTGTAATCCCTGTAATCCCTGTAATCCCTGTAATCCTGTAATCCTGTAATCCTGTAATCCCTGTAATCTGTAATCCTGTAATCCTGTAATCCTGTAATCTGTAATCCTGTAATCTGTA$ 

ATAAAAATGGATCAAAAACTCTGTTTCTAAAAATTTTTCAGACTTACCTTGACTGTAACAATAGGCACC AGGAACATTGTCTTTGTTCCCTAATGTAATTTAGCACTTAGAATTGTTCTTGGCACTTAATAGATGCTC AGGAAATGA

 $\label{eq:condition} \textbf{AAGGGGTTTTGAAGCTACTTTAAAACATTTTGTGGTTGTGCATGGTGGCTGACACATGTAATCCCAGCATTTTGGGAGACCAAGGTGGACAGATTGCTTGAGCTCAGGAGTTTGAGACCAGCCTGGCCAATATGGTGAAACCCTGTG$ 

 $\tt CTGGATGTTAGCCCTTTGCCAGATGGATAGATTGCAAAAATTTTCTCCCATTCTGTAGCTTGCCTGTTC$   $\tt ACTCTGATAATAGTTTCTTTTGCTGTGCAGAAGCTCTTTAGTTTACTTAGATCCCATTTGTCAATTTTG$   $\tt GCATTTGTT$ 

 ${\tt GAGGTTAGAACCGTTGTTAGCATATGTGGTCTATTCCCTCAGACTATCAGTTTTGGTTTTTCTTTAGAGATGGGGTCTTGCTATGTTGCTCAAGCTGGTCTCAAACTCCTGGCCTCAAGCAATCCTCCTGCCTCAACCTCCCAAAGT$ 

 $\label{thm:control} \textbf{TGTCTCTAAAAAAAAAAAAAATTAAGTCTCAAATTAGCCCTAAATTATCATTCGAATAAATGACTAAGA\\ \textbf{AGGGTACCACTGCTAACCATGTTCTGGGTAGATGGACCATTGACTATAAGCAATTACAAAAAAAGCAGTA\\ \textbf{GTGGCAGCA}\\$ 

 $\tt CTGCAAGCATGACATGTTTTGTCACACCCAAATGTTTCTTTGTGCCCCTTTGTAATTCTCCCCCCTACCTCAGTGTCTTCAGGCAACCATTGATTTGCCTTCTGTCCATTATGTATTAGTTTTCTAGGATTTTCTAGAATTTTA$ 

 $\tt CTGAAAACTGTTTTATCAGCAAGGTCTTTATGACCTGTATTTTGTGCTGACTTCCTATCTCATCCTGTGACTTAGAATGCCTTAACCATCTGGGAATGCAGCCCATTAGGTTTCAGCCTCATTTTACCCAGCTCCTGTAGAGTGG$ 

 $\label{total} \textbf{TGCAATCTCGGCTCACCTGCCTCCCAGGTTGAAGTGATTCTCCTACCTCAGCCACCCGAGTAGCTGGGATTGCAGGCATGTGCCACCCATGCCTGGCTAATTTTTGTGTTTTTTGGTAGAGATGGGAGTTTCACCATGTTG$ 

 $\tt CCAGCTAATTTTTGTATTTTTAGTAGAGACAGGGTCTCACCATATTGCCCAGGCTGGTCTCAAACTCCCGGACTCAAGCAATCCTCCCACCTCGGCCTCCCAAAGTGCTAGGATTACAGGTGTGAGCCACCACACCCGGCCAGAGA$ 

AGTTGAGACAACCAAAATTGTCCTCTGCCCATTGGATGCCAGTGGCACCACCTCCCGAGTTGAGACAACCAAAATTGTCCTCTGCCCATTGGATGCCAGTGGCACCACCTCCCGAGTTGAGACAACCAAAATTGTCTCCCAGACTTTG

 $\label{eq:condition} \textbf{ACATGATGAAACCCTATCTCTAGTAAAAATACAAAAAAATTAGCCAGGCATGGTGGCACATGCCTGTA\\ \textbf{ATCCCAGCTACTCGGGAGGCTGAGGCAGGAGAATTGCTTGAGCTCAGGAGACAGAGGTTGCAGTGAGCC\\ \textbf{GAGATTGTG}\\ \end{aligned}$ 

 ${\tt TGGCAAGATTTTTGGGCTTATTTTCTGCAAATTCTCCCTGTGTTTGGGGAACAGTCACAGAATGTGGAGGAATGAGCTTCTAGGCTCTGTGGCTGCAGATTCATGTCCAGGAGAACTCAGGTCCCAGGATAGGCAGAGAAAAACAGT\\$ 

 $\label{eq:attctaattatccttgaaccaaaatatctctgcaaacaggaaaaatatcttactcatttcagtactct} \\ AGCAATTACCACACAATACTTCAAAAGCTTGACTTGCTGTAATCACTCATACTTATTTACTGAATTAACTGATTAACTGATTAAAA$ 

 $\label{eq:total-continuous} \textbf{GTATATCTTTTCCATCTTTTAACCTATTTCCATTTGTATAGTTAAAATGTGTTTCTTATAGG\\ \textbf{CAGCATATAGTTTGGTCTTTCTTTTTTCCAATCATCATACAATCTCTGCTTTTTAATTGGTATGTTTA\\ \textbf{GACCACTTA} \\ \end{aligned}$ 

 ${\tt GGAGGATCACTTGAGCTCAGGAGTTTGCCTAGCCTGGGCAACTTAGGGAGATCCTGCCTCTACAAAAA}\\ {\tt TAAAAAATTATCCAAGTGTGGTGGTTGCACACCTGTAGTCCCAACTACTTCGGAGGGTTGCAGGAGTCCAGGAGGTCA}\\ {\tt AGGAGGTCA}\\$ 

 ${\tt TAGAAAATGGATTAGTGATTGCCTAGGGTTTGTGGGGTGACGGGGAGATTGGAGGACAGTGAAAGCAAGGGGTTTCTTTGTGGGGGTAAGGAAGTATTCTAAAATTCTGGTGATGGTTTCACAACTTGAATATTTGATAGCCATTGA$ 

 $\label{eq:condition} \textbf{AGGTACAGGTAAATACGGCCATTCCAAATGGGAGAAATTGGCCAAAATAAAGGGGTTACAGGGCCCATGCAAGTTCGAAATTCAGCAGGGCTCTCAAACTTTAAAGCTCCAAAATGATCTCCTTTGACTCC \\ \textbf{AGGTCTCAC} \\$ 

 ${\tt CATAGTGTCAATGGTCTTCACATTTTAGTATTTTTGCAGTGGCTGGTATCAGTTTTTCCTTTCCATATT}\\ {\tt TAGTGCTTCCTTCAGGAGCTCTTGTAAGGCAGGCCTGGTGGTGACAAAATCCCTCAGCATTTGCTTGTCTGTAAAGGA}\\$ 

 $\label{thm:condition} TTATCACCCAGACTAGAGACTGTGATCTCAGCTCACTGCAACCTCCGCTTCCCGGGTTCAAGTGATTCT\\ TCTGCCTCAGCCTCCAGAGTAGCTGGGATTACAGGCGCCTGCCACCACCCTGGCTAATTTTTGTATTT\\ TTAGTAGAG\\$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGGAGCCTGCTTTTTTGCCCTTCTGCCATGTGAGGACACAGCAAAAAGGTATCATCTTGGATGCAGGAGAGGCCTCACCAGACGCCAAATCTTCTGGTGCCATGGTCTTGGAATTCCCAGCCTCCAGAACTGTGAGA\\ \begin{minipage}{0.5\textwidth} ACTGTGAGA\\ \begin{minipage}{0.5\textw$ 

 $\label{eq:constraint} \textbf{AGTACAAAAAATAAAACCCCAAAATTGTTAGGAAATTGTTAGGAAATTGTTAGGAAATTGTTAGGAAATTGTTAGGAAATTGTTAGGAAATTGTTAGGAAATTGTTAGGAAATTGTTAGGAAATTGTTAGGAAATTGTTAGGAAATTGTTAGACATCTCAAGCTTCACAGAATTCTGACCTTTGCTACACTCTCATCC$ 

 ${\tt TTTGAATGTTGGCCTGTCTTGGTGGGTAGGGAAGTTCTCCTGGATGATATCCTGAAGAGCGTTTTCCAACTTGGTTCCATTCTCCCTGTCACTTCCAGGTACACCAATCAAACATAGGTTTGGTCTTTTCACATAGTCTCATATTT$ 

 $\label{thm:condition} TTTACTGCTATGTAACAACCACCCCAAAGGTAGTGCCTTAAAACATGAATCTGTGGATTCACGGTCCC\\ CACTGGGTAGGTCTCATTTGAGCTCTTCCATGTGGCTGCCATCAAACATCAGCAAGGGCTGGAGTCAAC\\ TGAAGGCTC\\$ 

 $\label{thm:condition} \textbf{ATATTCAGCCTATCTGCAATATTGAAGTGTCATGGGGGATGATTAGAAAAATAAAAACCTAAAAAGCCTCCTTGCAGGGCAATAATGGAAAAAGTTGAGAAGCACTGTTATAGAGTGCGTACTTGAAGGTTTAATTTCCAGTGCTT$ 

 $\label{eq:condition} A GAGAGTGAAGGCCGGGCGGGCGGCTCTCACCCCGGCTAAAACCGCACTTTGGGAGGCCGAGGCGGCGGATCACGAGGTCAGGAGATCGAGACCATCCCGGCTAAAACGGTGAAACCCCGTCTCTACTAAAAATACAAAAATTAGC$ 

 ${\tt GAGTGTTTTCAACCTGCTGAATAAAAACAAAGGTTTAACTCTGTGACATAAAATAACAAATCATAAAACAATCATAAAACAATTCACAGGTTGCTTGTTTCTAGGTTTTTATCACGCGATACTCAGTTTTTCATGGCAGGGCACAATGGGCTCCAAAA$ 

 $AAGTGGAATTATTTTATGTAGATTATACCTTCATAAAAAATGGGAAAAAGGCCGGGTGCGGTGGCTCAT\\GCCTGTAATCCCAGCACTCTGGGAGGCCGAGATGGGCAGATCACCTGAGGTCAGGAGTTCAAGACCAGC\\CTGATCAAC$ 

 ${\tt AATATGCGGTGTTTGGTTTTTTTTTTTTGCGATAGTTTACTGAGAATGATGGTTTCCAATTTCATCCATGTCCCATGTCCAAAAGGATATGAACTCATCATTTTTTATGGCTGCATAGTATTCCATGGTGTATATGTGCCACATTTTTCTTA$ 

 $AATTTTAAATTCCAAATAGTGAAACTTTAAAAAATATTTTAAAAAATTTCCTAATCCGAGATCAATCCTA\\ GTTCAACACATTCAAGAGCTGATTTCAGAGGAGAGATAATTGGTCAACAAGTTCTTTGGTTTTGACCTT\\ GTTTTCCGA$ 

 $\label{thm:condition} \textbf{GACCATCCCCCAGCCTGACACCCGTAAAGGGTCTGTGCTGAGGAGGGATTAGTAAAAGAGGAAGGCCTCTTTGCAGCTGAGAAAGGAATGTCTCAGTGTAAAACCCAATT}$ 

 ${\tt GGTGCCAAGACCATTCAGTAGAAAAGATCTCTTTTCAACAAATGGGCTGAGCAAACTGGATTTCCACATGCAAAATGATAAAGTTAGACTCTTACCTAATACCATATACAAAGATTAACTCAACAGGGATCAAAGATCTAAATGTA}\\$ 

 ${\tt AGGAGACACTTTTTAAAAGTGCTTAAACTAGGCTGGGTGCTGTGGCTCATGCCTGTAATCCCAGCACTTTGGGAGGCTGAGGCGGGTGGATCACGTGAGGTCAGGAGTTCAAGACCAGCCTGGCCAATGTGTTATACCCTACCTCT$ 

 $\label{eq:condition} \textbf{ATTAGACAGATCAATGAGACATCACAGACTTCACAGACTTCACAGACTCACCCAAATCAATAGAATCTACATTCTTCAGTGCCACATAGACTCTACAAAACTCTCCACCCAAATCAATAGAATCTACATTCTTCTCAGTGCCACATAGCACTTAT$ 

 $\tt CCCAAAACATAAACTAATAAATCTTTTAAATGCATTAGTTTCTTAAATTGTGTAGAAAACAAAATTTAGGTTGCAAAGTTACAATAATACTAGCTTTTAGACTAATCAATGTTTTTTTAAATGTGTTAGTCACTGAAATCATGTTTA$ 

 ${\tt GAGGCTGCAGCAAGCCATGACTGTGGCACTGCACTGTAGCCTGGGTAACAGAATGAGACCCTATCTCAA}\\ {\tt AACTAAAAGGAAAAAAAAAAAAAAAAAACCAAATATAACCTCTGAAAACAAAGGTATCTATTGTGGAGGAATCTAATGGAT}\\ {\tt TTAATGGAT}$ 

 $\tt CTACCTTAGCCTCCTGAGTAGCTGGGATTACAGGTGCCCGCCATCACACCCAGCTAATTTTTGTATTTTTTAGTAGAGATGGGGTTTCTCCATGTTGGCCAGGCTGGTCTTGAACTCCCAACCTCAGGTGATCTGCCCGCCTTGGCC$ 

 $\label{eq:continuous} \textbf{AGTCCATTTAATGGCAATTTCATAAGTGGCAGATGATTTTTATTGTAATTTTCTGGTGAGCTGATTAAGTGGGAGGCCAGGCTCAATGTCTTTAACAATTCGGGGAGACGGAGGCCACGCTCAGCAGGAACACT$ 

ACCAGAATCTCTGGGACACAGATAAAGAATGTTATGAGGAAAGTTCATAGTGCTAAAGGCCCACATCAA AAAGTTAGAAAGGTCTCAATTTAACAACCTAATGTCACATCTAGAGGAACCAGAAAAATAAGAGCAAAC CAACTGAAA

 ${\tt CAATTTACCAGTCTGTGTCTTTTAATTGGAGCATTTAGTCCATTTACATTTAAAGTTAATATTGTTATGTGGAATTTGATCCTGTCATTATGATGTTAGCTGGTTATTTTTGCTCGTTAGTTGATGCAGTTTCTTCCTAGCCTCGAT$ 

 $\tt CCCAAGTAGCTGGGATTACAGGCATGCCCACCATGCCTGGCTAAGTGTTTTGTATTTAGGAGAGATGGGATTTCACCTGACCTCAGGTGATCCACCCTCCTCAGTCTTCCAAAGTGCTGGGATTACAGGCGTGAGCCACTGCGCCCCC$ 

 ${\tt GTAAATGACGAGTTAAAGGGTGCACCACCAGCATGGCACATGTATACATATGTAACAAACCTGCATGTTGTGCACATGTTACCCTAGAACTTAAAGTAAAATTTTAAAAAAAGGGAAAAAAACATTATGAGAATTTGCGTAAAAGA$ 

 ${\tt GTTTGCTTTTTTTTTTTTTTCAAACCTTGCAATTTGTGGTGGACAGTTTTTCCTCTCAGCACATAATAA} \\ {\tt TCTATCCACTTCATTCTTTTTTTTTTTTTTTTATAAGTTTTAGGGTACATGTGCACAATGTGCAGG} \\ {\tt TTAGTTACA} \\$ 

 $\label{thm:condition} {\tt GTTGAAGAGATCTGATTGATGTTTCCAGCAGGTCTCTGTTGGCTCAGGGGAGAACCAATCTCCAAAA} \\ {\tt TACTTCATCTCTGTCAAAGCCTCCGACATTCATCCTTGTGCCCGGGCATCACAGCAGCTTTGTGAGGCTGGAAGGACG} \\ {\tt GGAAGGACG} \\$ 

 $\label{thm:condition} TTTTGAAACAAACATCATTGGTCACAGGGTCTGATGCAGGAGCTGGTGTTAACTTACTGGCAGAAACAGCCATTGCTAGGCAAGTGTTCTTGTGAGGGTGGCTTATCTGAAATGCTGCAGTCTTGAGGAATTTTTTATGATAGGTCC$ 

 ${\tt TACAAGTCTCAGAACTTGAAAGGCAGCACTGGCTCCTCAGAAAGTTTCTGGCTCCAAGCTGGTGCTGCTGCTGCTGCTGGTTTGAACAGGTCATGGAGCTGGAGACCCGGGGAGGAACCATTTGAACAGCAGCACTGGCCCCTCCCGGGGTCTC$ 

 ${\tt TAAGTGAGAATAAGTGACTTTTTAATGTTTTGACAACCATTTTTAAAGGTCACAGAACAACTGCAATTTTTACCACTGATTATTAATAATCAGATGTTTTTGCACAGTTGTAGCCTGCACAGTCGTTTTTATGGTCCCACACTACTC$ 

 $\label{eq:totalact} \textbf{ATATTCACTTTACTGAAGTGTCTAGAACTGAACCTGCAATATTTCCAAGGTATGCCTGTAGTTGTGAGATGTCAGTGTTTTACTTGAAGTGTTAAAACATTGATTTTAAGTTGACTGTTAAAATTAGGTATGTGTATTATTATCCC$ 

 ${\tt GTATTTTTGTAGAGATGGGGCTTCACCATGTCACCCAGGGTGGCCTCAAACTCTTGGACTCAAGTGAT} \\ {\tt ACACCTGCCTCGGCCTCCCAATGTGCTGGGATTACAGGCATGAGCCACCATGCCTGGCCTTCATATTGCTAATTTCTT} \\ {\tt TAATTTCTT} \\$ 

 ${\tt TTTTTGTAATGTTGGCATACTTGGGTAATTTTGTGGCAAATATATTTCCCAGTGGACCTTTTGTTGGTGGCACATACTGCAAGGTTGCTGGGAAAGTGGAGTCTGTTTGGTGGATGAGCTCTGACTGCCGTTTTGGAACCTCACCTC$ 

 ${\tt AAATCTGATGTCCTCACATTTCAAAACCAATCATACCTTCCCAATAGTCCCTGAAAGTCTTAACTCATT}\\ {\tt TCAGCATTAACTCAAAAGTCTACAGTCCAAAGTCTCATCTAAGACAAGGCAAATATCCTACCTTAAATA}\\ {\tt TACTTCCTA}\\$ 

 ${\tt TCACATTGCATGTCTATATCAAAACATCTCATGTACTCCATAAATATATACACCTAATATGTACCCACA} \\ {\tt AAGATTAAAAAACAATTTTTTTTTTTTAAAAAAATATGTTGTGGATAAACTTCCACATCAGTATATGCAGGTCTATGATTT} \\ {\tt CTATGATTT} \\$ 

 ${\tt TGATCCACCTGCCTCGGCCTCCCAAAGTGCTGGGATGAGAGGCGTGAGCCACCGCGTCCAGCCTATAGTGAAATTCTTAAGAATTTTATCTTTTGGGCTGGACATGGTGGTTCACGCCTGTCATCCCAACACTTTGGGAGGCTGAGG$ 

 $\label{eq:ggctattt} \textbf{GGGCTATTTGAATTAAACATTTTTATAGATCACGAGGTCAGGAGTTCAAGAACAGCCTGGCCAACATAGTGAAACCCCGTCTCTACTAAAAATTAGCTGGATGTGGTGACACGTGCCTGTAGTCCCAGCTATTCAGGAG$ 

 $\label{eq:control} \textbf{A} \textbf{G} \textbf{A} \textbf{T} \textbf{A} \textbf{A} \textbf{C} \textbf{C} \textbf{T} \textbf{G} \textbf{C} \textbf{A} \textbf{C} \textbf{C} \textbf{A} \textbf{C} \textbf{A}$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGGAGGCTCCATCTGTAGGCTGTGCAGCTAGCCAGATCCTTGCATGCCAGCTTTCGGTGCTCATTGGTACCAGCCACAGCTCCTTGTGAGTGCTTTAGGAACACAAGTCTCACCTTAACCTTCTTAATAATCTCAT\\ \begin{minipage}{0.5\textwidth} AATCTCAT\\ \end{minipage}$ 

AACTCAAAAGGAGTTCAGAGATTGAAACTTTTCTTAGGGCAAAAACATTTTATCAGCACTTATGTGAAGAAAAATGAAAAACTGGAATAAAATTGATGGTAAAACTTTGTTATTTTAGCATTAAGTAATATTCATAGATGTATGGAT

 ${\tt TAGAGCTACATTTCAGGGAATCAGGATATCTTAAATTCCGGCTATGTGGCTGTGGGCAGTTGGCCTTGGAGTATATCTAAACTGTGGCCTCCACTTTCATTTTTCTTGAAACATTGCTATCAACTGGGAAGAGTATGTGACTTTATG$ 

 $\label{eq:GAGTGCAGCTGCGGCTCACTGCAGCCTTGACCTCCAGACTCAAGCGATCCTCCTGCCTCAGCCTCTGCAGACTCAAGCGATCCTCCTGCCTCAGCCTCTGGAGTAGCTGGGGATACAGGCGCGCACCACCATGCTCGGCTAATTTTTGTATTTTAGTAGAGACAGTGTC$ 

 $\label{thm:condition} \textbf{TCTTGTTGCCCAGGCTGGAGTGCACCATCTCGGCTCACGGCAACCTCTGCCTCCTGGGTTCAGGCATTCACCTGCCTCAGCCTCCCGAGCAGCTGGGATTACGGGCATGTGCCACCATGCCCAGCTAATTTTGTATTTTT$ 

 $\tt CTGCCCGGCCACCACCCCGTCTGGGAGGTGTACCCAACAGCTCATTGAGAACGGGCCATGATGACAATGGCGGTTTTGTGGAATAGAAAGGGGGGGAAAGGTGGGGAAAAGATTGAGAAATTGGATGGTTGCTGTGTCTGTGTAGAAA$ 

 $\label{eq:condition} \textbf{ATAGAGTCTCGCTCTGTCCCAGGTTGGAGTGCAGTGGCAAATCTCGGCTCACTGCAACCTCCACCTCCCAGGTTCAAGCAATTGTCCTGTCTCAGCCTCCCGAGTAGCTGGGAATACTGGCACACGCCATCAAGTCCAGCTAAA$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGCCTAGGCAGGTGGATCACTGGGGGGGTGTAGTGGCCTAGCCTGGCCAACACAGTGAAACTGTCTACTAAAAAATACAAAAATTAGCCAGGTGTAGTGGCACGTGCCTGTATTCCCAGCTCCTCTGGAGGCTGAGGCAGGA\\ \end{minipage}$ 

 ${\tt GCTAGCAACCAATTCAGTGTTTATTTGGGAATGTCTTTATTTCAGCTTCATTTTTTGAAGGATAGTTTA}\\ {\tt GCTGGCTATAGAATTATTAATTGATCATTCTTTTCAGTGTTTAAAAGTGTCATCATGCTACCTTCTGGGTTCCATTGT}\\$ 

 $\label{thm:control} \textbf{GTTCTTTTTTTTTTTTTTGAGATGGAGTCTCGTTCTGTCACCTAGGCTGGAGTGCAGTGGCGTGACTCGGCTCACCTCCTGGATTCAAGTGATTCTCCTGCCTCAGCCTCCTGAGTGGCTGGGTGGCTGGGATTATTG$ 

 ${\tt CAGGAGATCGAGACCATCCTGGCCAACATGGTGAAACTCCGTCTCTACTAAAATACAAAAAATTAGCCGGGCATGGTAGCGGATGCCTGCGGTCCCAGCTACTCGGGAGGCTGAGCTGGAAGAATCACTTGAACCCAGGAGGCAGAG$ 

 $\label{eq:condition} \textbf{ACTTTACCTGAGGGCATAACTTTTAATTTTTTTTAAGAGAAGAGGTCTCACTATGTTGCCCAGGCTGGTCTCCAACTCCTGGGCTCAAGTGATTCCTCCCACCTTGGCCTCTCAAAGAGCTGGGATTACAGGAGTGAGCTACCA$ 

 $\label{eq:condition} \textbf{AAGTGCTGGGATTACAGGTGTGAGCCACCGGCCAAGAAACCCTGTCTTTACTTAAAATACAAA \\ \textbf{AATTAGCTGGGCATGGTGGCATGTGCCTGTAATCCCAGCTACTCGGGAGGCTGAGGCAGGAGAATTGCTTGAACCCGG}$ 

AAGACCAAGACCAGCCTGATCAATATGGTGAAACCTCATCTCCACTAAAAATACAAAGATTAGCTGGGCGTGGTGGTGTGTACCTGTAGTCCCAGCTACTCAGGTGGGAGGCTGAGACAGGAGAATTGCTTGAACCTGGGAGGCAGA

GAAGTATTCCTCTAAGTGTCCCCTGCAACTTCATTAAATTTATCCGGGATATTTGTTAAAAATGCAGCC CCCTGGATCTCACTGGAGACTTCTAAAACAGTTTCAGAGAGTGGGGGCCAGGTTTACATGTATTTTTTA AAACTTCTA

ATCACAAGGTCAGGAGTTCGAGACCAGCCTGGCCAACATGGTGAAACGCCGTCTCTACTAAAAATACAA
AAAATTACCTGGGCGTGGTGGTGCGCCTGTAATCCCACCACTTTGGGAGGCCAAGGAGGGCGACCA
TGAGGTGAG

 ${\tt GGGGAAGTTCTCCTGGATAATATCCTGCAGAGTGTTTTCCAACTTGGTTCCATTTCTCACATCACTTTC} \\ {\tt AGGTACACCAATCAGACGTAGATTTGGCCTTTTCACATAGTCCCATATTTCTTGGAGGCTTTGCTCATT} \\ {\tt TCTTTTTAT} \\$ 

 ${\tt TAAATGAATTCAGTGACGTTTTAGGATACAAAAGCAACATATAAAAGCCAGTAGCATTTCTATATACCAATAGTGATCAAGCAGGAGAACAAAATCAAGAAGTCAATCCCATTTACAATAACTAGAAAAACAATACTAAGGAATATTTT$ 

TATAAACATTTATATGCAGATACTGGGTCCAAAATAAAAGTGTGGCACTACAATTACGTTGTCATTG
TCCCCCACCAAGAATACATAGAAACATCAGGGCAGAGTTGATACCAAATCTCATAGAAAGCCTTAAAAA
TAATTATTT

TGCAGCCAAAAGACACATGAAAAAATGTTCATCATCACTGGCCATCAGAGAAATGCAAATCAAAACCAC AATGAGATACCATCTCACACCAGTTAGAATGGCGATCATTAAAAAGTCAGGAAACAACAGGTGCTGGAG AGGATGTGG

 $\label{eq:totalaa} \textbf{ATTCTTTAGAAAGAGTGAACAACTTTTTAATAAATCATAAAATTTAAAAATTATATATATTTTTGAGCACTTAAAAATTTGCATTTTTATCAAAATTATTAAAATCTTGCAGCTTACAGTAGTTCACTCAAATATTGAGCACT$ 

 ${\tt CAGCCTTGCCAACGTGGTGAAACCCTGTCTCTACTAAAAATACAAAAGTTAGCTGGGCATGGTGGCGCATGACACCTGTAGTCCCAGGTACTCGGGAGGATTGACGCAGGAGAATCTCTTGAACCTGGGAGGCGGAGGTTGCAGT}$ 

 $\label{eq:control} \textbf{ATTTCTATTTCCCTTGTATATTACAGTGAATAGTAGTAGAGCATGACCTTTCCTTTTCTCTGAGTCCAAATTAAAAAGTCACTGGGGCCTTTCTCATGAAGCTACAACTTAAGAACCTCGCCCTATCCTGAATGTTGAGGGTGTG$ 

 $\label{thm:condition} TTACTTGTCATATCTCCTCAAGCTTCTCTTGGCTATGACAGTTTTTTAGACTTTCCTTGATTTTGATGA\\ CCTTGACAGTTTTGAGGAGTTCTGGGCCCGATGTTGCAGAATGCCTCCTTATTGAAATTTGTCTGATGT\\ TTTCCTCAT$ 

 ${\tt TACCCAAGGAACAATTTGATGACAAAATCTCCAATTTTCTGTAACATGGATTGAAGTTTGTGTCTTCCCAAGTTTTATTCGAAGATCCTAAAATTCATACTGCTTTTTCCAAATCCTAACATTTAGATTGTTTTTCAAATCCTAAAGTT$ 

 $\label{thm:control} \textbf{GATTAGCTTATGACTTTTAGATATCTTTGGATTGCTTTCCTTTCAGCAGCATGAAAAATATCTACTAGACTATAAGCTCCATGAGGGCAGAGATTTGGTGTTTTGTTTCCTGTTGGCTCCCCAACATCAAGTACAGTGTCTGGGCAG$ 

 $\label{totalatt} TCCTCTGAAATCAGCTCTTGAATGTTTGAACTAGGATTGATCTCGGATTAGGAAATTTTTAAAATATT\\ TTTTAAAGTTTCACTATTTGGAATTTAAAATTAATCCAAATTATGTAATATACAACATTTTGGAATTTAC\\ CAATCAATA\\$ 

 ${\tt GAGTGCAATGGTGAGAGCTCAGCTCACTGCAACCTCCGCCTCCTGGATTCAAGCAATTCTTCTCTCAGCTCCCGAGTAGCTGGGATTACAGGCACCTGCCACGACACCTGGCTAATTTTTATATTTTAAGTAGAGATGGGGTT$ 

AAAAGGTAGAATACCTTTTTTTTTTTTTTTTTTTGAGACAGTCTCACCCTGTCGCCCAGTCTGGAGTGCAATGGCGCAGTCTCGGCATACTGCAAACTCTGCCTTCAGGGTTCAAACAATTCTCCTGCCTCAGCCTCCTGAGTAGCTGGGA

 $\tt CTGTTTCTACAAAAAATTAAAAAAAATTTTTTTTTTTTGAGACAGAATTTCGCTCTTGTTGCCCAGGCT\\ GGAGTGCAATGGCGTGATCTCGGCTCACTGCAACCTCTGCCTCCTGGGTTCAAGCGATTCTCCTGCCTC\\ AGCCTCCTG\\$ 

 $\label{thm:contract} TTATTAAGGGTTGCCTCAACTAATATCATCCATTCATTATTCAAAATATATTTATTCAGGCCGGACAT\\ GGTGGCTCATGCCTGGAATCCCAGCACTTTAGAAAGCCAAGGCAGAAGGATCACTTGAGCCCAGGAATT\\ TAAAACCAG\\$ 

 ${\tt CTAGCATAAAATGTATACTCAACAAAGACAGTGGGAGTGATGAAATTAAGACCATTTTATGAAAAGTCT}\\ {\tt GAAAAACTTTTATGTCTTTATTTAGAAACATTAATTTATGGAGAAATTCTCTTGAATAATTAAAAGAAA}\\ {\tt AATATTTCA}\\$ 

 $\label{eq:condition} \textbf{AGTAGCTAGGATTACAGTCATGCACCACGCCTGGCTAATTTTTATGTGTTTTTACTGGAGACAGGGTTTCACCATGTTTGGCCAGGTTTGAACTCCTGACCTCAAAGGATCTGCCCACTTCATCCTCTCAAAGTGCTGG$ 

 ${\tt GATCCGCCCGCCTCGGTCTCCCAAAGTGCTGGGATTGCAGGCGTGAGCCACCACCCCGGCCCAGATTCAGATTTTAAAAAAACATTGTTATCTTGGAAATTGGTTATCTACTTCTGTACTGGAGGAAGACAGTGTGTGCCATGTTGC$ 

 $\tt CTCCCAAGTAGCTGGGACCACAGGTACACCACCACCATGCCTGACTAATTTTTGTATTATCATTATTTTTGAAGACAGAGTTTCACTGTTGTTGCCCAGGATGGAGTACAATGATATGGACTCAGCTCACTGCAACCTCGGTCTC$ 

 ${\tt GTCAAATGGCCCAGCAAAACCTCAAAACTATACACATACAGGTAAAACCAATATATACATATGTAACTT} \\ {\tt ACATATATAAACTATATTAAGTATATGTGTGTGTATACATATATTTAATGAGTAACCACTAGGTAGTGG} \\ {\tt GCATTAAAA} \\$ 

 $\label{thm:constraint} TTGCCAGGCCGGTCTCGAACTCTTGACCTCAAGTGATCTGCCCACCTCAGCCTCCCAAAGTGCTAGGATTACAGGCATGAGCCACCATGCCCAGCCAAGTTCTTGCTTTTAAATGAGAATACCAGACAGTGAAGGAAAATGTTGCCT$ 

 $\tt CTAAGAAAATGTGGCACATATACACCATGGAATACTATGTAGCCATAAAAAAGATGAGTTCATGTCCTT\\TGCAGGGACATGGATGAAGCTGGAAACCATCATTCTAAGCAAACTATCACAAGGACAGAAAACCAAACA\\CCACATGTT$ 

 ${\tt AGAGCCACAACCAGCCGCCTTTCAGTCAGCATGGTGAGTCTTCCGATGCCCCATGTGAAGAATTGAACTTCTTTTCTGAAGAGTGGCCCCCTCGTGGTGGGCAGGTTCCCAGGGAACGGAAACGCCTTCCCTTGGTTCCC$ 

GATTAAAGATTTAAACGTTAGACCTAAAACCATAAAAACCCTAGAAGAAAACCTAGGCAGTACCATTCA GGACATAGGCGTGGGCAAGGACTTCATGTCCAAAACACCCAAAAGCAATGGCAACAAAAGCCAAAATTGA CAAATGGGA

 ${\tt CATTAGATGACAAGGATAAGGATAAGGGTATGGATATGGATATAAATATAACTATAGTTATAGGTAATATAGGCAGACCTGTGTCACCTGTATCCCCACATTTTTTCCTCATTTCTACCTTCATGGAAGAGGGAATTTCAGGGATAA}$ 

AAAAAAAATAAATTAAACTTTTTATTTTAGAATAACTTTATAAGAACATTGCAAAGCTAGTACAGAGAAT ACTTGAGTACCCTTCACCCAGTCCTCCCAGGGTGAACATCTTCCACAACCACAGGGCATTTGACAAAAC CGAGACGTT

AAACAGAGCCAAAGACAAAAACCACATGATTATCTCAATAGATGCAGAAAAAGCCTTTGACAAAATTCA ACAACCCTTCATGCTAAAAACTCTCAATAAATTAGGTATTGATGGGACGTATTTCAAAAATAATAAGAGC TATCTATGA

AAGGCTATGAAATGACTGGGACTCTTCGATACAGTGCAAAATGGTACAACCACTTTGGAAAACAGTTAG GCAGCTTCTTATAAACTTATACTTTACATATAACCCAGAAAATCAAATCCTGGATATTTATCCAAGAGA AATAAAAAT

 $\label{eq:condition} \textbf{ACTTCCCCAATCTAGCAAGGCCAACATTCAAATTCAGGAAAATACAGAGAATGCCACAAAGATACTCCCCAAGGAGAAGCCCAAAGGCCACATAATTGTCAGATTCACCAAAGTTGAAATGAAGGAAAAAGTGTTAAGGGCAG$ 

 $\label{eq:condition} \textbf{AGGGATCCACCCTGGCCTCCCAAAGTGTTGGGATTACAGGCGTGAGCCACCCCACACCTGGCCTATT\\ \textbf{TGAGTATATATGTGTGTGTGTGTGTGTATATGTGCATAAACTGTAGTATTATTTACAATTTTGGTAT\\ \textbf{TATATTCTT} \\ \end{cases}$ 

 ${\tt GGCAAGACATTTTTATTTTTTGTAGAGACAGGGTTTCACTATTTTGTCCAGGCTGGTCTTGAAATCCTG}\\ {\tt GCCCCAAGCAATCCTCCCATTTTGGTCTCTCAAAGTGCTGTGATTATAGACATGAACCACTGCACTCTG}\\ {\tt CTGTCTTTT}\\$ 

 ${\tt CATTGGGAATTAAATTTCAATATGAATTTGGGAGGGGAACAAATATTTAAACCATAACTGTGTTCTTC} \\ {\tt ACATCCCTAGAATTCCAAACAACACTTCAGAGTGAAGTAGAATAAGCCTCAATTCAACAGTAAGAATTTC} \\ {\tt ACTTACAAG} \\$ 

ATATGGAACCAAAAAGAGCCCATATAGCCAAGACAATCCTAAGCAAAAAGAACAAAGCTGGAGGCATC ACGATACCTGACTTCAAACTCTACTACAAGGATATAGTAACCAAAACAGCATGGTACTGGTACCAAAACAGCACATA

 $\tt CCCAGCTCAGGTTGCCCTCACAAAACAGAGGAAATGCTCATTTTCTGTGAGAATTTGGAAATTGTAGTA\\ AGTTTCTAGAAAGCACCCCAGGATGTTCAAGAACATATACTGATTGCAAAAAATAATGTCCCATAACAAA\\ AGATGTTTG\\ \tt$ 

 $\label{thm:condition} TTTAGTAGAGCAGGGTTCATCATGTTGGACAGGCTGGTCTCGAACTCCTGACCTCAGGTGATCCTCCCGGCTTGGCCTCCCAAAATGCTGGGATTACAGGCGTGAGCCACTGTGCCCAGTAGCCATGTAACTTCTGACCTCTAGT$ 

 ${\tt GAATACAACTTACAAGGGACGTGAAGGACCTCTTCAAGGAGAACTACAAACCACTGCTCAATGACATAA}\\ {\tt AAGAGGATACAAACAAATGGAAGAACACTCCACGCTCATGGGTAGGAAGAATCAATATCATGAAAATGGCCATACTGC}\\ {\tt CCATACTGC}\\$ 

 $\label{eq:condition} \begin{tabular}{l} ACCTCCTGGGTTTAAGCAATTCTCCTGCCTCAGCCTCCTGAGTAGCTGAGATTACAGGCATGCACCATC \\ ATGCCCAGCTAATTTTGTATTTTTAGGAGAGCTGGGGTTTCACCATGTTGGCCAGGCTGGTCATGAATT \\ CCTGACCTC \\ \end{tabular}$ 

 $\tt CGTCTCTAGGAGAGGATAATCAATAAGGCCCATTTTGAGCTTCGTCTCTTGGAGAGGCTAATCAATAAGGCCCATTTTGTGGGGTTGCTGGGGAAGGCACGAGGCACAGACCATCACGCCTGGCAGGAGCAGGTGGTCATGGTTACT$ 

 $\label{eq:condition} \textbf{ACCTTGAAACTCTCATCGTGGCCCACCATGAAGCCTTATGTTCATAGACCTCCAAGCCCACTCCTGCTT} \\ \textbf{TATTATTTATTTGTTTGTTTGTTTGTTTTGTTTGGAGATGGAGTCTCACTCTGTTGCCCAGGCTGAAGTG} \\ \textbf{CAGTGGCAT} \\$ 

 $\label{thm:condition} \textbf{GGTTGGCAGCCTCACCAAGAGCAGTTCCCCACAGGGTCATGAAGTACAGACAAAAGCAGTTTATTTCT} \\ \textbf{ACTACATCCTCTTTCAAGAGAAAACTAATAGAAGAATCAGATGAAAATTTAAATTTTTAACATAACACAGACTTTCCAG} \\ \textbf{ACTTTCCAG} \\ \textbf{CTTTCCAG} \\ \textbf{CTTTCCAG } \\ \textbf{CTTTCAG } \\$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGTGGGCACTGTGTGCACTCTGAGCCCAAGCTAAGCCATCATATCCCCTGTGACTTGCACGTAT\\ ACATCCAGATGGCCTGAAGTAACTGAGGAATCACAAAAGAAGTGAAAATGGCCTGTTCCTGCCTTAACTGATGACATT\\ \end{minipage}$ 

 $\label{thm:condition} {\tt GTGTGTCCAACCATGCTCAGCTAATTTTTCTATTTTTAGTAGAGACAGGGTTTCACCATGTTGGCCAGGCCAGGCTCTCAAAGTCCTGACCTCAGGTGATCTGCCTTGGCCTCCCGAAGTGCTAAGATTACAGGCGTGAGCCAC$ 

 $\label{thm:constraint} TTTTCCTGTATTCTGATGTCACAATCTCCAAATCTACAGAACCTGCATTCAAGAACACCTGTTAGAGCTTTATAGCTGAGTATAAAACCCTTCTAAAGAGGATCAAAACAAGACAACAATTGTTTATGGATGACCAAAAGTTTT$ 

TTTCTTAACTATTTTAAGAGAATAAACTAGGTATTGATGAAATGTATCTCAAAATAATAAGAGCTATTT
ATGACAAACCCACAGCCAATATCATACTGAATGGGCAAAACCTGGAAGCATTCCCTTTGAAAACCGGCA
CAAGACAAG

 $\label{eq:condition} A CAAGACCCCAGAAACTTTTCATAAGAAGGAGGTGCAGGTAACACATCCCTTTTCAGTGTTTCTATTAT\\ TTCCTGTTTACTTCCTGTTTCTGCCAGGACCAATTGGCAACATCCTTCACCCTGGCAGTGGCAGTTGGT\\ TCCAGATTC\\$ 

 ${\tt AACAATGAGGATATCCTACATGGACACTGAAATGTGAAGTTCGTGTAATTCTTATGTGTCACAAAATAT} \\ {\tt TCTTCTGATTTTTTTTTTTTTTTTTTTAGTCATTTAAAAATATAGAAAACATTCTTAGCTTGTAGGTTGTACAA} \\ {\tt AATTAGGTG} \\$ 

AGGGCTGGACACAGCCTTCGGGACCAGGCAGCCTGCAGCAGGGGGCTGGACACAGCCTTCGGGACCAGGCAAGCACCTGCAGGGGGGCTGGACACAGCCTTCGGGACCAGGCAAGCACCTGCAGCAGGGCTGGACACAGCCTTCA

 $\label{thm:condition} \textbf{GTCTTCCACAATGGTTGAACTAGTTTACAGTCCCACCAACAGTGTAAAAGTGTTCCTATTTCTCCCCAT\\ \textbf{CCTCTCCAGCACCTGTTGTTTCCTGACTTTTAATGATTGCCATTCTAACTGGTGTGAGATGATATCTC\\ \textbf{ATTGTGGTT} \\$ 

 $AGATGTGCAGGTTATGAGTACAACTCCTTTGTGTGCCGGAGCAGGCTTGGACTGGCTCAGGAGAACCAA\\ CTGTTAAATTTTCAGGAATTGTGTATTCTAGTTGTTAAAGTGTTAGAAGCTTGAAATTGGGCCATGTTGGGGATATTCA\\ GGATATTCA\\$ 

ACTGTTCTTGTCTTGCCTAACAAATTTTAAAAGTAAGATGCAAAAGAATAAAAGTATTTCCAAGTAAAT GAACTGCATCCTAGAAAAAACAGCTCAAGAAAATGTGTAGAAATAAAAAATACCTATCATAAAACCAGA TAATGCCTG

AGCATTCTTATATACCAACAACAGACAAACAGAGAGCCAAATCATGAGTGAACTGCCATTCACAATTGC
TTCAAAGAGAATAAAATACCTAGGAATCCAACTTACAAGGGATGTGAAGGACCTCTTCAAGGAGAACTA
CAAACCACT

 ${\tt ATTCTTCTCTTTTATTCTTTATTAGTCTTGCTAGTGGTCTATCAACTTTGTTTTCAATCTTTTCAAA}$   ${\tt AAATCAGTTCCTGGATTCACTGATTTTTTGAAGAATTTTTTTGTGTCTCTATCTCCTTCAGTTCTGCTC}$   ${\tt TGATCTTAG}$ 

 $\tt CGGCCCACTGCAACTGCAACCTCTGCCTCCTGGGTTCAACTGATTCTCCTGCCTCAGCCTTCCAAGTAGCTAGGACTACAGGGGTGTGCCACCACACCCAGGTAGTTTTTGCATTTTTAGTAGAGACGGGGTTTTACCCATGTTGGTC$ 

 $\label{eq:gamma} \mbox{GGTGCCTGCCACCACGCCCAACTAATTTTGTGTTTGTATTTTTAGTAGAGACGGGGTTTCACTGTGTTAGCCAGGGATGGTCCCGATCTCCTGACCTCATGATCCGCCCACCTCGGCCTCCCAAAGTGCTGGGATTACAGGCATGAGC$ 

 ${\tt TGGGGGGGTGCTCACAGTGCCCAGGCTGGTTTCGAACTCCTGAGTTCAAGCAGTCCACCCTCG}\\ {\tt GCCTCCCAAAGTGCTGGGATTACAGGTATCAGCCACCATATCCAGCTGTTTTAATTTGATTTAACTTCC}\\ {\tt AATCAATAT}\\$ 

 ${\tt CAATCCTCCAACAACAACAGCAACACCGGCTCCTCCCTGAATCTCCAGCTCAACAACCCTCAGACTTGAGAGGCAGCACCGGCACCTCCCCAAGGCTCCAGCTCCATGACCCTCAGATTTGAACAGCGGTAGCACCAGCTCCTGTCC$ 

 ${\tt CTTTTCATGGTTAAAATGTCCTGAATTGACTGTGGCCTGTTGGGAGTCGGGATGGAGGAAATTACTTATGGAAAATGAAGAAGAAAGGGAAGCACCACGAAGAATATGTCATCAATTTTTACATCAAGGACTCCAAGATAAAGAGA$ 

 ${\tt CGTAGGTTTTCTATGTAAACAATCAGATTTTCTGCAAGTATTAGTCTCCTTTCTAATTTGTTATAATTTT}\\ {\tt AATTTCTTTTTCTTTTAAAATTTTTCGTAGAGACAAGGTTTTGCTATGTTGTCCAGCCTGGTCTTGAACTCCTGGGC}\\ {\tt CTCCTGGGC}\\$ 

TAATCCCAGCACTTTGGGAGGCCAGGTGGATCACCTGAGGTCAGGAGTTCGAGACCAGCCTGACCAACA
TGGAGAAACCCGGTCTCTACTAAAAACACAAAATTAGCTGGGCATGGTGGCTCATGCCTGTAATCCTAG
CTACTCAGG

 ${\tt CAGGGTCTGACTCTGTCACCCAGGCTGGAGTGCAATGTTGCGATCTTGGCTTACTCCAACCTCCGCCTCCCAGGCTCAGCCTCAGCCTCAGCCTCAGCCTCAGCCTGAGACCACAGGTGCATGCCATCACACCCCAGCTAATT}$ 

 ${\tt AATCCTCCCACCTTGGCCTCTCAAAGTGGTGAGATTACAAGTGTGAACCACCACCACCCTGGCCTTAATTTTTAATTTTTGTGGTTTTTCTCTTTTTGAGACAGAGTTTCACTCTTGTTGCCCATGCTGGAGTGCAATGGCACGATCTC}\\$ 

 ${\tt CATAGTTGACTAATACACTGGTGAACTCGGGATTAAACTCCAGGAATGCACTTTGGGAGGCCGAGGCGGGAGGATCACGAGGGTCAAGAGATCGAGACCATCCTGGTCAACATAGTGAAAACCCCGTCTTTACTAAAAATACCAAAAAATT}$ 

 ${\tt TCAACATAGTGTTGGAAGTTCTGGCCAGGGCAATCGGGCAGGAAGAAGGAAATAAAGGGTATTCAATTAGGAAAAGAGGAAGTCAAATTGTCCCTGTTTGCAGACGACATGATTGTTTATCTAGAAAAACCCCATCGTCTCAGCCCAAA$ 

 $\tt CTGCAGGAAGCAGCTCCAACAGCAGGAGCTTGCAAGTCGCACCTTAGAACTGCTCTCCAGCAGCCTGAGGATGGCCTCTGACCGGGATACACAAGTGCTGGCCACTGCATGTGCGAACACCCGAGAGCCGATGTGTATGAAG$ 

 ${\tt TCCTGACCTTGTGATCCACCCGCCTTGGCCTCCCAAAGTGCTGGGATTACAGGTGTGAGCCACCGCGCCCCGGCCTGTTGTTGTTTTTTGACAGGATCTTGCTCTGTCACTCAGGCTGGAGTGCAGTGGCACGATCATGGCTCACTGCA}\\$ 

 $\label{thm:condition} \textbf{GTGCCGTTCTTGTGATAGTGAGTGAGTTCTCACAAGATCTGATGGTTTTATAAGGGGCTCTTCCCACTTTGCTCGGCCACTTTGTGAAGAAGGTGCCTTGCTTCCCCTTCACCTTCCACCTGTAAGTTTCCT$ 

 ${\tt ATAATAGAAAAGATATGCAAGGTCATTTTTGACCATACTCAAAATTTTCCTCTATACACTGGCTTTTAGAATGAACTCCTTTGAAAACAAAGGCTTAGAGGGGGGCTAAATGTCTTCTATAGCAGAGTCACACCCTGGAGGAGCAGA$ 

 ${\tt TCAAGCCTATAATCCCAGCACTTTGGGAGGCTAAAGTAGGAACATTGCTTGATGCCAGGAATTCAAGACCACCTGGACAACACACGTGAGTCCCCATCTCTACAAAAAAATTTTTAAACAAATTAGCCAGGACTGGTGGCACAGGCC$ 

 $\label{total} TTTTCAGGTGAGAAAACCAAGGTACGGGGAGAGATTGAGTTGTTTCCAGGTTGCGCAGGTAGAAAGTGGCAGAGCCAGGATTCAAACCTGAGCAGCTCAGTGTTGTTATCGGTATGATTGTCACGACTGGTATGAGAGGCAGATGC$ 

 ${\tt TAGCATCTTCATTTTTAACATTTTTCTTCTTCTAAGTATATTAGTCCATTCTCACATTGCTACAAAGA} \\ {\tt AATACCTGAGACAAGGTAATTTATAAAGAAAAGAGGTTTAATTGGCTCATTTCTGCAGGCTGTACAGGA} \\ {\tt AGCATAGTG} \\$ 

 $\label{thm:condition} \textbf{GCTCTGTTGCCTAGGTTGGAGTGCAGTGGTGTGATCTTGGCTCACCTCCACCTCCTGAGTTCAAGCAATCTTCCACATCAGCCTCCCGAGTAGCTGGGATTACAGGTGCCTACCACCACCACCCTGGCTAATTTTTGCATTT$ 

CTTAAGAGCTTCTGCACGGCAGAAGAAACTACCATCAGAGTGAACAGGCAGCCTGCAGAATGGGAGAAA
ATTTTTGCAATCTACCCATCTGACAAAGGGCTAATATCCAGAATCTACAAAGAACTTAAACAAATTTAC
AAGAAAAG

 $\label{eq:total} \textbf{ATACCCTAAGTACTCAATAAATGCTAGGGCAGAGCTTTGCATACCCTAAGTGCTCAATAAATGCTAGCTCAGGGCAGAGCTTTGCATACCCTAAGTGCTCAATAAATGCTAGCTCAGGGCAGAGCTTTGCATACCCTAAGTA$ 

 $\label{thm:condition} \begin{tabular}{l} GCACCCGTAATCCCAGCTACTCGGGAGGCTGAGGCATGAGAATCCCTCTGGGCCACAGAGGGAGACTCT\\ GTCTCAAATAAATAAATAAAATCAAGATCAAAATGTATATGATCAGGAGCCTCAGCTCCACCACTTAC\\ AGCTCTGTG\\ \end{tabular}$ 

 ${\tt TCTAGCCGGGCCTCTATCTAGTTCCCTTAACCCTTTACCTAACCTATTCCTTCTTTTACAATGTTTTAAATTTTTTATTATCTTAAAAGACAGGGTCAGCTGGGCATGGTCGCTCACGCCTGTAATCCCAGCACTTTGGGATGCCGAG$ 

ACCAAAAGCAATGGCAACAAAAGCCAAAATAGACAAATGGGATCTAATTAAACTAAAGAGCTTCTGGACAGCAAAAGAAACTACCATCAGAGTGAACAGGCACCTACAGAATGGGAGAAAATTTTCACAATCTACCCATCTGACAAA

 ${\tt CAGCTCCAGAACTCACTTAGCTCTGGTAATGCTATCTTTTCTCTTGTCCCTTTATGGCTTCCTGTGGTT}\\ {\tt GGTGTCTTTGTTCCTCTGCATCTCTCTTTTTTTTTAACCCTAGCTACATCTCCGTAAACA}\\ {\tt GACTCTTTA}\\$ 

 $\label{thm:condition} \textbf{GTAACATCTACCAAAGCACCTTTTTCACAGTCCAAAAAACAAGCCTGAGACCTATTTTTCAGTTT\\ \textbf{CGAAAAAAAGCAATTTTCTTACAAAGTCAAAGCTTTAATATGTAAATGAGGCAATTAATAAACAATATG\\ \textbf{CTCTAATAG} \\$ 

 $\label{thm:condition} \begin{tabular}{ll} GCATTGAGGTCAGGTGTGGTCACACCTGTAATCCCAGCACTTTGGGAGGCCAAGGCAGGAGGACT\\ GCTTGAGCCCAGGAGTTCGAGACCAGCCTGGGCAACACGGTGAGATCCTGTCTCAATTTTTTAAATAA\\ \DeltaTTGTTTTT\\ \begin{tabular}{ll} ATTGTTTTT\\ \end{tabular}$ 

 ${\tt TCCTGAGTAGCTGGGATTACAGGCACGTGCCACCATGCCCGGGTAATTTTTTGTATTTTTAGTAGAGACGGGGTTTCATCATGTTGGCCAGGATGGTCTCTATCTCTTGACCTTGTGATCTGCCCACCTCAGCCTCCAAAGTGCTGG$ 

 $\label{thm:condition} \begin{tabular}{l} GCCCTGGTGCCCTTTGGATAATTTGAGCCCTAAGTATTTAACCTGCTGTGAGCAGAGCTGAGCCTTTGGT\\ TTGGAAACCTTATAGCCACAGGTGGCGAGGAAATTTAAGAGTGCTTGGGTGGCTTGATTGCACAAGGTT\\ TCTGAACGG\\ \end{tabular}$ 

ACCAAAAATACAAAAATTAGCCGGGCGTGGTGGTAGGCGCCTGTAAGCGCGGCTATTCGGGAGGCTGAGGCAGGAGAATTCACTTGAACCCAGGAGGCAGAGGTTGCTGTGAGTCGAGATCATGCCACTGCACTTCAGCCTGGGTGA

 $A GAGTGGAAAATGGAGGATGTTACTGGAATAGAGAATAGATGAGCAGAGCCACCAGATGGCCATCAC\\ ATGGCCTGTTCTGGTGGCAACATATGTTAGTGCCTCCTGGAGGCTGTACAGGGACGGGGCTGGGGGAAG\\ GGCTCCTGT\\$ 

 $\label{thm:condition} \textbf{GTCATCTTGATTTGGTGGGTTTTGGTCAGTTTCCTTACTACAACCTATTTTATCAGCAAGGTCTTTAT\\ \textbf{GAGATGTATCTTGTGCCGACTTCCTATCTCATTCTATGACTTAGAATGCCTTATTTTTCCTAGCTCCTG\\ \textbf{TTCAACATG} \\$ 

 ${\tt AATGTAAGTGAGGTCATATAGTATTTCTCTTTTCTATATCTCACTTATTTCGCTTGGCATAATGTCCCTC} \\ {\tt AGTTCCATCTATGTTGCAAATGGTAGGATTTCCTTCTTTTTTCAGGTAGAATCATATTTCATTGT} \\ {\tt GTATATAAA} \\$ 

 $\label{eq:GATGATAACAATGAACTTCTTCAAGGAGACAAGTATGAGTAATAAGGTAGTAATAAGTTGAATTTTTA\\ TGGAGTTGCTACTTCTGAATTAAAACTAGTTGAGGTTAAGTAGATATTCAAAATTATTGCTATAATCTT\\ CACTTGAAT\\ \\$ 

 $\label{thm:condition} \begin{tabular}{ll} ATGGAGTCTCACCTGTTCACCAGGTTGGAGTGCAATGTGCAATCTCGGTTCACCTATAACCTCTGCCTCTCAGGTTCAAGCGATTTTCTTGCCTCAGCCTCCCCAGTAGCTGGGACTACAGGCGCCTGCCACCATGCGCAGTTAATT\\ \end{tabular}$ 

TTCCTCAGGAAGGTGGCCCGGGAACAGCACAACAAGATGACTCTGAGGAATGTTTCCACCGTGATGGCCCCTAACCTCTTTCTGCACCAAGGGCGGCCCCCCAAGCTCCCCAAAGGCAAGGAGAAGCAGCTGGCAGAAGGGGCA

 ${\tt TACCACCATTTTTGTATTTTCACAGGGTTTTCCCATGTTGACCAGGCTGGTCTCGAACTTCTGACCTCT}\\ {\tt GGTGATCCACCCGCCTCAGCCTCCCAATGTGCTGTGATTACAGGCATGAGCCACCATGCCTGGCAACAT}\\ {\tt AACTTTTAT}\\$ 

 ${\tt TAATGGTTTTTAAAGAAGTACTGAAAAAAAAAAGGGACAAGTAAAATTTGCCTACCACAAAATTGTGAGTCCTGTTCAATGTAGGACATCATAGACAATTTTTGGGAGAAGTTAAATGTTCTTTCAAAAATGTTAAGATATTAATA$ 

 ${\tt AAAACACATATACATACCATGGGATATACCATTACACATTTATTAGAATGTCTAAAAATTAAAAATA} \\ {\tt AAAATAGGCCGGGCGCGGTGGCTCACGACTGTAATGCCAGCACTTTGGGAGGCCGAGGTGGGCAGATTA} \\ {\tt TGAGGTCAG} \\$ 

 $\label{thm:control} \begin{tabular}{ll} GCCACTGCACCCGACCGAATTACCATCTTGTAAGAAAAGTTTTCCTGGCCAGGTGCAGTGGTTCATACC\\ TGTAATCCCAGCACTTTGGGAGGCCAAGACAGGTGGATCACCTGAAGTCAGGAGTTCGAGACCGGCCTG\\ ACCAACATG\\ \end{tabular}$ 

 ${\tt TCAATTTTAGAATAAGTGTGATGTGGTGCTGAGAAGAATGTATATTCTGTAGATTTGGGGTGGAGAGTTCTGTAGATGCCTATTAGGTCTGGTCCGGAGCTGAGTTCAAGTCCTGAATATCCTTTTTAATTTCCTGTCTTGTT$ 

 ${\tt CACTGCAACCTGTGCTTCCGGGTTCAAGTGATTCTCCTGCCTCAGTCTCCTGAGTAGCTGAGATTACAGGCATGCACCAGCATGCTCGGATAATTTTTGTATTTTTAGTAGAGACGGGGTTTCACCAGATTGGTCAGGCTGGTCTTG}$ 

AAACAGGGATAACAGTATCTACTTCATAGGTTGTTATGAGGATTAAATAACCGTTTCGTCTTATCTATA TCCATCTATCTCTACATAGATATATATATGTATATATATCCTAGAATAGTGCTTGGCATGTAGTAAACT CTGCTATAG

 ${\tt TCAGATAGCAAATAGAAAACAGAGCCCCCAGTTAGGTGTGGTGGTCATGCCTGTAATCCCAGCACTTTGGGAGGGTCGAGATGGGAGGATCATTTGAGCCCAGGAGTTTGAGATCAGCCTGGGCAATATGGTGAGACCCTATCTTCA$ 

GAACTAGAAATACCATTTGACCCAGCCATCTCATTACTGGGTATATACCCAAAGGACTATAAATCATGC TGCTATAAAGACACATGCACATGTATGTTTATTGCAGCACTATTCACAATAGCAAAGACTTGGAACCAA CCCAAATGT

 $\label{thm:condition} \begin{tabular}{ll} ATGGATTGCCTGAGGAGTTCGAGACCAGCCTCGGCAACACGGTGAAACCCCATCTCTACTAAAA TACAAAAAATTAGCCGGGCATGGCGGCATGCACCTGTAGTCTCAGCTACTCGGGAGGCTGAGGCAGGAG AATTGCTTG \\ \end{tabular}$ 

AGGCTGAGATGGGAGGATTGCTTTAGCCCAGAAGTTGGAAGCCAGTCTGGGCAACATAGCAAGACCTCA TCTCAAAAAATAAAAATTTCCAGCTTAGAAGATCCTTTATTGTTGTTTTTAAAAAAATAGCATCTACACA GAGAAAATA

 $\tt CTGGACTCTTTTTGGTTGGTAAGCTATTGATTATTGCCACAATTTCAGATCCTGTTATTTGGTCTATTCAGATGCCACATTTCTGGTAGTCTATTCAGATGCAACTTCTTCCTAGTTTAGTCTTGGGAGAGTGTATGTGTCGAGGAATTTATCCATTTCTTCTAGATTTTCTA$ 

 ${\tt TAAATATTATCATATGTAATCTATGAGCAGAGGGCATATCATTTGGAACAAGAAGTGATACAAA}$   ${\tt AAATGAAGAAACTAAAATGTATAGGGAGAGTGACATCAGCAAGATGACAGAATAGGACTTTCCAGCACT}$   ${\tt CATCCCCTA}$ 

 $\label{thm:condition} \textbf{GCATATGTTGAAGCAGCTTTGCATCCCAGGGATGAAACCAACTTGACCGTGGTGGATAAGCTTTTTGAT\\ \textbf{TTGCTGCTGGATTCAGATTGCCAGTATTTTATTAAGGATTTTTGCGTCGATATTCATGAAAGATATTGG\\ \textbf{CTTGAAGTT} \\$ 

 $\tt CGAGGCAGATTACTTGAGCTCAGGAGTTTGAGACCAGGCTGGACAATATGGGGAAGCCCCATCTCTATCAAAAATTACAAAAATTAGCCAAGTGTAGTGGTGCACGCCTATAGTTGCAGCCACTTGGGAGGCTGAAGTGGGAGG$ 

 $\label{tcgcctctgg} \textbf{TCCGCCTCGGGTTCAAGCCATTCTCCTGCCTCAAGCCTCTCAAGTAGCTGGGACTACAGGCGCCTGCC} \\ \textbf{ACCACGCCTGGCTAATTTTTTAGTAGAGATGGGGTTTTACTGTGTTAGTCAGGATGGTCTCGATCTCC} \\ \textbf{TGACCTCGG} \\$ 

 $\label{eq:GCCAGCCTGGAGTGCGATCTCGGCTCACTTCAACTTCCACCTCCGAGTTCAAGCAGTTCCTCGCCTCAGCCTCTCGAATAGCTGGGACTACAGGTGTGCACCACCACCCCTCAGCTAATTGCTGTATTCTTAGTAGA$ 

 ${\tt CTATTTTCATCTTTTGAATGTGTTCTATTAAATACATTATTTTTAGAAGAAAAAAGAACTATTGGATACTAGGTTTAATACTTTGGTGATGAAATAATCTGTACAGCAAACCTCCATGACACTAGTTTACCTATACAACAAACCTTT$ 

 $\tt CTTCAAAGAGCACCTTCTGCCACTGGAAGGGTCCCAAAGTGACAGCACCACCCCGCGTCGAGGCCCTCACCTGCGTGCCAGGCACTCGGCTTGACGCTTTACTGGCATCACCCCTGAATTTTCCCAGCAATCCCAGGAGGGTGG$ 

 $\label{eq:totalact} \textbf{ATTTATTTCCTTAAACTTATTTCTTTTTTAAATTAAAAGTAGTACTTGCTGGTTGAAAA TATTAGATGATTTCCAATTCCGGCATCATAATTTCTGTTGGGAAAGAAGAACTAAATAATACAGAAGTA TGTGAAACA$ 

 ${\tt GAAGCGATTCTCCTGCCTCAGCCCGAGTAGCTGGAATTACAGGGATGAGCCACCGTGCTTGGCCTTTTT}\\ {\tt GTTTGTTTGTTTGTTTTTTTAAAGACAAGATCTTGCTCTGTTGCCCAGACTGGAGTGCAGTGGTGCTATCTC}\\ {\tt TGCTATCTC}\\$ 

 $\label{thm:capacity} {\tt GCAAGACCATCACTTGAGGCCAGGAGTCCAAGACAAGCCTGGGCAACATAGTGAGATACCTACAGAAAA} \\ {\tt TGTAGACTTCCACACAGTGAGATCTCTATAAAAATGTAGATCTCAACATAGTGAGATCTCTACAAAAAA} \\ {\tt TGTTAAAAG} \\$ 

 $\label{thm:condition} \textbf{GGTAGCACTAAGTTGGGTGGCAGTATGTATGCAGAGATGTACATGGATTTCAGAGTCAGGAAGTGAAACCAATAATTACCGACTGGAGATTTGACACGGGGACTGGGAGTTTTGGAAGTGTCAAAGATGAGTCATAGCTTCTT$ 

TTTTCACCTTTTTCATGAGGAACAAAAAGGAACAGGAGGCAGCCCAATTGCTGTTCCTGTGAGCTCCGGCTCTCCGCAGGGGGCTGGCCTGAAAGGGCAAATGCCTTTGGAGCAGGCTTCAATCTTCTCCCTCTGGAGAGAA

 ${\tt AAAGCTCTGGGATTACAGGCGTGAATCACAGTGCCAAGCTCTTGAAATTATCTTGAACATTATAGGAATTAAAGTATCACATTTACACAGATGCCTTAATGCAAAATTATTAATACTAGAAGTTTGAAAACATTTCTAGTCTTTGT$ 

TATTTAAATTTAAATTAAGTAAAATTTAAAATTCAGCTCCTCCATCAAACTAGCCACATTTAAGTGCTC
AATAACCACATGTGGCTAGTAGCTTCCCTGTTGGAAAACAGAGATATAAAATGTTTACATCACACAAAA
TTCTATTAG

 $\label{thm:control} \textbf{TGTCCTCAGAGAGCTTACATTCCAGTGGCAGGTCTGGACTTTGGTCATGGCCTTTTTAATGCATAATTA} \\ \textbf{TGAAACAGAATAAGTGATCTGAGGAAACACTGTGGGGGGCTCTGAGAATGCTTATCAGGAGAATTTCACT} \\ \textbf{GGATCTGGC} \\$ 

 $\label{totalacac} TTGTTGTTTGCTTCAAACACATCAAGTATATTCTCGCTTCAACTACTTTGCTCTTGGTATTCCTCC\\ TTCCTAGAAAGATTCCCCTAAATATTCCCCCAACTCCCCTACCCACGGATACCAGGCTCCGTTGCACAGGA\\ TCGCCAACA$ 

GCCCAGGTGGACCCTCCACCCCCAGCACTGGCTGTGAGAGTAGCCAGAAAATGGCGAGATTCTCT CCCTGGGTAGGAAGGAAAGATATGAGCAGAAGCGTGCCTAGCAAGGCTGCACTGTCGGAAGTAGAGTGG GCTCAGAGA

 $\tt CTGTGGTCCGAGAGACTGTTTCTTATAATTACAGTTCTTTAGCATTTGCTGAGGAGTGTTTTACTTCCAATTATGTGGTCGATTTTAGAATAAGTGCCATGTGGCACTGAGAAGAATGTATATTCTGTTGATTTGAGGTGGGAAGTT$ 

 $\tt CTGGGCAACAGAGTGAGACTCTATCTCAAAAAAAATCAAAATCAAAATAAAATTTTAATGAGTTGCCTGTATTTGAAAATCATTTTGTATAGAGATCTTGGTATCTCTGGCTCTCCTGAAAGGTTAGAAGCCCTGGTCAGACGGACCT$ 

 ${\tt AATGGGCACATGGTACATTTTGTCTAGTTTTATAGTTGTTTACAGCAGAAGATTCAGTCTGAAATCCATTTTTTTATTATGGCCAGAACCAGAAGTCAAGCACTCTGTTTTTTGAAAAGCACATATTGTGTACCTGCTACCTTCCATTCATTCCATTCCATTCCATT$ 

AGATCAGATTATGCCTCATATTTTCTGGTTAGTCTATATGCTATTGTATTATTCCATTTGCATTGCAATAAAGGAATACCTGAATCTAGGTAATTTTTAAAGAAAAGAGGTTTATTTGCCTTCTGCAGACAAGAAGCATGGCTCTA

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} $AGGCTGGTCTCAAACTTCTGGGATTACAGGCTGCTCAAAGTGCTGGGATTACAGGCATGAGCCACCCAGCCTACAATTTTCTTCAGAAGATCTCTGCTCAGGGAGGCTTCTTCATGGGCTGAACTCC\\ \end{minipage}$ 

 $\label{thm:constraint} \mbox{ATGCTGATAACCAGCAGAACTCATGAAGACCTGGGAACATGAGCCTTGGCTAAGCAGAGTTTGATCTCA} \mbox{TTAGGAAGTTCTGGTAAAACAGACACAACTAAATGCTAGTTGGAGAAGGGAGGAGGATGTTGTAGTCA} \mbox{TCTTTATAG}$ 

 $\label{total} \textbf{TCTCTCTCTTTTTTTTTTTTGAGACAGAGTTTCGCTCTTGTTGCCCAGGCTGGAGTGCAATGGCGCATCTCGGCTCACCACAACCTCCGCCTCCTGGGTTCAAGCGATTCCCCTGCCTCAGCCTCCGGAGTACCTGGGATTAC$ 

 $\tt CGCAGAACATGCAGGTTTGTTACATAGGTATGCACGTGCCATGGTAGTTTGCTGCACCCATCAACCCGTCATCTACGTTAGGTATTTCTCCTAATGCTATCCTTCCCCTAGCCCCCCAACCCCGACAGGCCCAGGTGTATGATGTC$ 

CATGCCCCTTGTCACCATGTTTTACACTCTCATAAAGTTTTAGGACCAGATAGGTCCTGAGAGATCACC
TTATCCAAATTCTTCATTCGACTAATAAAGAATTTTAAAACTCAGATAGCAAAATTCTAAAATCAAACA
GCTTACTAC

 $\label{thm:carca} \textbf{TGACCAAGAAGTGGGTCATAACACTAATTTGATGAGTTTGAACCAACACTTTAAACAATTAGAGAGCATAATTGGATTGGAAACTATCAGGGCGCATTACATAGAGTAAGGCCATGTGTTATCTTGTACAAATTTCATTTTGATTTG$ 

 ${\tt GAGAATGTTTTCTGCTTTTAAGGGCTCATGGGATTAGACTGGGCCACCCAGATAACCCAGGATCATCCTTTCTTGTATTGTCAAGAACCCTAATCACATCTGCGAAGTCCCCTGTGCCACTAGTAGGGTAACACAGTCATGGTTCTG}$ 

 $AAAATGACTTGGTGTTTTCTTGAAATTCTGATTTCACTGGGCTTCCTGTATCTTATCTGGCAACTTTTA\\ TAATAAGCCAACCCCACATTGTGATGGAGTAATTACTATTAAAATTAATGTGTAATGTTAACAACGATA\\ ACAGTTAAC$ 

 ${\tt CCAAGTAGCTGGAATGCATATCACCATGACTAATTTTTAAATTTTTCTGTAGAGACAGGGTCTCATCATCATGCTCCAGGCTGGTCTTAAACTCCTGGGCTCAACTGATCCTCTCGCCTCAGCCTCCCAAAGTGCTGCAATTACAGG$ 

 ${\tt AAAAATCACATAGTTGTCTCAAGAGATGCTGAGGAAGCACTTGATGGAAATCAACAGCCATTCATGATA}\\ {\tt AAACTTTTAGAAAACTAGAAATAGAAGGAAAGTCCTATAATCTGACAAAGGGTATCTAACACATTACTC}\\ {\tt TAACATCAT}\\$ 

 $\label{eq:ccag} \textbf{GCCAAGTGGTTAAGAAGCCCAGATGCTAGATGTGTGGTATTATTTCTGAGGGGCTCTGTTCTGTTCCATT\\ \textbf{GTTCTATATCTCTGTTTTGGTACCAGTACCATGCTGTTTTGGTTACTGTAGCCTTGTAGTACAGTTTGA\\ \textbf{AGTCAGGTA} \\$ 

A GAAGAGGCAGGTAGAGCCACGCCTGTGTCCAGTATGGGAGAGACCATTCCATTGCTTTTAGAAATCAGTTCAGTGCAGTGCTGTTCTAAAAGAATAAATCCAAAAAGGCTTCTTTTAGGAGAAAATTAATGACTTTAAGGAGAACA

 $AAGCTCCATCCTCCAATTCTGGGGCAACCGTGTGGAGATGATCAAAATGCTTCACCTTCAAAACTTT\\ CAAAGGAAGAGTTAATACAGAGTATGGATCGTGTAGATCGAGAAATTGCAAAAGTAGAACAGCAGATCC\\ TTAAACTGA$ 

 ${\tt TAGTGGCATGCGCCTATAGTCCCAGCTATGTGGGGGGGCTGAGGCAGGAGGATTGCTTGAGCTCAGGAGTTGAAGCTGCAGTGAGTTATGATCGTGCCACTGCACTCCAGCCTGGGGGACAAAACCAGATCCTATCTCAAAAATAAA}$ 

AGAACTTAAACAAATTTACAAGAAAAAATCAAACAACCCCATCAAAAAGTGGGCGAAGGATATGAACAG ACACTTCTCAAAAGAAGACATTTATGCAGCCAACAGACACATGAAAAAATGCTCATCATCACTGGCCAT CAGAGAAAT

 ${\tt GATGCCTCCAGATTTGTTCTTTTTGCTTAGTTTTGCTTTGGCTGTGAGGGCTCTTTTTTTGGTTCCATAT}\\ {\tt GAATTTTAGGATTTTTTTTTTCTAGTTCCATGAAGAACGATGGTGGTATTTTGATGGGAATTACATTGAATTTTGTAGAT}\\ {\tt TTTGTAGAT}\\$ 

 $\label{eq:total} {\tt GTGGGACTCCCCATTTCTGCACTCGCTCCCCTGTATGGGGGCTCCTGGATCATGCCAGGGTCACGTCTGATAAACCCAATGTTAGTTGAAAGCCTCCAGATGAAAGGCACTCAGTGCACTCCGCCTCCTGAATATCATTGTTCGGCC$ 

 ${\tt GTAGTGAATAAGTCTCATGAAATCTGATGGGTTTATCAGGGGTTTCCACTTTTGCTTCTTCCTCATTTTCTCTTGCTGCTGCCATGTTAGAAGTGCCTTTCAGCCTCCCGCCATGATTCTGAGGCCTCCCCAGCCATGTTGGAACTGT$ 

 $\label{total} TGAACAATGTTAGCTAGTAGACTGGTGCATGGAGGTTTAATATTTTTCCATTTTAAAAATATACTTAAA\\ ATTCTCTATAGTAGAAAGGTTTATATACAAAAAGCAAAAACAATCATGTCACCCTCTACTTAAAATATTT\\ CAGTGACTT\\$ 

 $\label{torus} {\tt TCCGCCCGCCTTGGCCTCCCAAAGTGCTGGGATTACAGGCGTGAGCCACCGCGCCCGGCTCCAGTAATT} \\ {\tt TTTTTTTTTTTTTTTGAGACAGAATTTTGCTCTTTTCGCCCAGGCTGGAGTGCAATAGCACGATTTCAGT} \\ {\tt TTACTGCAA} \\$ 

 ${\tt GCCCCAGTTCCCCACCTAAAGCCCACCACATAGAGCAGAGCTAAGAAGATTAAATGAGAAAATATCTGG} \\ {\tt AAAGTTCTAGCAGATGAGAAGAGCTCACTCCACAAGAGCTGCCAACACATGTCTAGTTAACAGAGAGTT} \\ {\tt AACAAGTAT} \\ {\tt CAAGTAT} \\$ 

 $\label{thm:condition} \textbf{GAGTTTGAGACCAGCCTGGACAACATGGTAAAAACCTTGTCTCTACTAAAAATACAAAAATTAGGCAAGCTACTTATCCCAGATACTTGGAAGGCTGAGGCAGGAGAATCACTTGAACCTGGGAGGTGGAGGTTGCAGTGAGCCGAGA$ 

 $\label{thm:condition} \textbf{GGTGACATATTTCATCTTGTTTAATCCTCACAGCAACCCTATGATAGGCATGATTTCATCCCCACTTTA \\ \textbf{TAGATGAGGAAACTAAGGAACAAAAATATTAGATAATATCCCAAGGCCACACAGCCAGGAGGCAGCAGAACACAAGATT} \\ \textbf{ACCAAGATT}$ 

 $\label{eq:condition} \textbf{AGCTGGTTATGGTGTATGCCTGTGGTCCCAGGTACTCAGGAGGCTGAGATGGGAGGATTGCTTGAGCCAAGGAGGTTGAGGCTGTAGTGAGCCAGTCATGCCACTTCACTCTGGACAATACAGTGTTCAGGGCTTTTA$ 

 $AACAACCCCATTAAAAAGTGGGCAAAGGACATGAACAGACACTTCTCAAAAGAAGACATTTATGTGGCC\\ AACAAACATATGAAAAAAGCTCAACATCACTGATCATTAGAGAAATGCAAATCAAAACCACAATGAGAT\\ TTTCATAAT\\$ 

 $\label{thm:condition} \textbf{GTGATCTCGGCTCACCTCCCGAGTTCAAGCGATTCTTCTGCCTCAACCTCCTAAGTA} \\ \textbf{GCTGGGATTACAGGCATGAGCCACCATGCCCAACTAATTTTGTATTTTTAGTAGAGACAGGGTTTCTTC} \\ \textbf{ATGTTTGTC} \\$ 

 $\label{eq:condition} \textbf{ACAGAGGTGAATTTACTGTGAGGCTGGTGACGCATCAGGGCTCCTGACTTGCATGTCCTCCCAGGGCCATGGAGGAACTTTCCAACGCATTCGCATGGGCATATGTTTCACATTTGCAAAACTAACACATTTCAGTTGCAATTTGG$ 

 $\label{thm:control} \textbf{TGCGGTTGCGCTGACAGAATGGTTGGGTTGGCTCAATACTTTGATATTTTTCTTTTTCGTCTT\\ \textbf{TGCCGTAGTATTTTTTTTTAAGTTATGCATCTAAATCAAGACAGAATCACATTTCTTTGCCCCAAAAC\\ \textbf{CCTTTTGCC}\\$ 

 $\tt CTTTGACAAAGCAAAAGCAATACAATGGAGCAAAAACAGTCTTTTCCACAAGTGGTGCTGAAACAACTGGACATCCACACGCAAAAACCATGAATCTAGATACAGACTTTACACCATTTACAAAAAAGTAACTCAAAAATGGATTAT$ 

AGCCTGGGCAACATGGCAAAACCCTGTCTCTACAAAAATTAGCCAGGTGTGGTGGCATGCGCCTGCAGT CCCAGCTACTCAGGAGGCTGAGGTGGGAGGATCGCCTCTCACCTCACCACCTCCCACTGTACCAGGAGG CAGAGGTTG

 $\tt CGCCCTACTGGGAAGTGAGGAGCCCCTCTGCCCGGCCACCACCCCGTCTGGGAGGTGTACCCAACAGCTCATTGAGAACGGGCCATGATGACAATGGTGGTTTTTGTGGAATAGAAAAGGGGGAAAGGTGGGGAAAAGATGAGAAA$ 

 ${\tt AATCATGTTTATCAAACTTGAGGATTTATAAGAAATACCTGTATAGCTTCTTTATTTTAGTTTATTTTT} \\ {\tt ATTATTATTTATTTTTTGAGACAAGGTCTTGCTCTGTTGCCCAGGCTGGAGTGCAGTGGCTCAGTCACGCTCAC} \\ {\tt ACAGCTCAC} \\ {\tt CAGCTCAC} \\ {\tt CAGCTCAC$ 

 $\label{eq:gaagaattaatatcat} \textbf{GGAAGAATTAATATCATGAAAATGGCCATACTGCCCAAAGTAATTTATAGATTCAATGCTATTCCCATT\\ \textbf{AAACTACCATTGATATTTTTCACAGAATTAGAAAAGGCTATTTAAAATTCGTGTGGAATATAAAAAGAG\\ \textbf{CCCAAATAG}$ 

TGTTAGAAGGAAAACTAACAAACAGAATGGACATCCACACCAAAAACCCATCTGTACATCACCATCATC AAAGACCAAAAAGTAGATAAAACCACAAAGATGGGGAAAAAACAGAACAGAAAAACTGGAAACTCTAAAACGCAGAGCG

 $\label{thm:control} \begin{tabular}{l} GCCAATATCATACTGAATGGACAAAAACTGGAAGCATTCCCTTTGAAAACTGGCACAAGACAGGGATGC\\ CCTCTCTCACTACTCCTATTCAACATAGTGTTGGAAGTTCTGGCCAGGGCAATCAGGCTGGAGAAGGAA\\ ATAAAGGGC\\ \end{tabular}$ 

 $\label{totaccca} \textbf{TTCACACCCAACTGCAGCTCTTTCGTGGATCACACCTGTAATCCCAGCATTCTGGGAGGCCAAGGTGGGAGATCACTTGAGCCCAGGAGTTTGAGACCAGCCTGGGCGACACAGGGAGACCCCGTCTCTACAAATAATTTTAAAAA$ 

 $\label{eq:targa} \textbf{ATTAAGAAACTCACTCAAAACTGCTCAAGTACATGGAAACTGAACCACTGTTCCTTAATGACTACTGGGTAGATAACAAAATGAAGGCAGAAATAAAGATGTTCTTTTGAAACCAATGAGAACAAAGACACAACATAACAGAATCTC$ 

 ${\tt CCTGGGTGTGACTCTGTGGGTGTTGCCAAGGAAAATTAACATTTGAGTCAGTGGACTGGGAAAGGCAGACCCCTCAATCTGGGTGGACACAATCTAATCAGCTGCCAGTGCGGCCAGAATAAAAGCAGGCAAAAGAATGTGAAA}$ 

 $\label{eq:condition} \textbf{ACATTGGTTTGGTCCAGAAAGACGGGACAACTTGAAGCAGAGATTGGGGGAGGGGGGTGTTCCAGCTTATGGGTAGAATTTGAAAATTTGTCTGGTTGGCAATTGGTTGAGTTTATCTAAAGACCTGGGATCAATAGAAATTGAATGTCT$ 

 $\tt CCACCGTTGGGCTGTTGTGCATAATGCTGATGTGAAAACTAGTGAACAAGTATCTGTTTTTACCTTTAT\\TCTCAATTATTTCACCTTGGAGTGGAATTGCTAGTTTATATGGTAATTCTGTATTAACATTTTTA\\GGAACTGCC$ 

 $\tt CCTTCTAAGCACTGCTTTAGCTGTGTCTCAGAGATTCTGGTATGTTATGTCTTTGTTCTCATTGGTTTC$   $\tt AAAGAACTTATTTATTTCTGCCTTGATTTTGTTATTTACCTAGTAGTCATTCAGGAGCAGGTTGTTCAGTTCCATGT$ 

 $\tt CTAAGGCGGGAAGATCGCTTGAGGCCAGGAGTTTGAGACCAGCCTGGCCAACATGGTGAAACCCCGTCTCTACTAAAAAATACAAAAATTAGCTGGACATGGTGGCACGTGCCTGTAATTCCAGCTACTTGGGAGGCTGAGGCATGAG$ 

TATTCCTTCTTAAATTCTGAATTGAGCCTCTCGTAAGTCTCATAAGTCATCTCTATCCCTGCAAATTCATTTTGCCAGGTCTCCCAAGGAATAGAAAAGTCATTTGTTGATAATGAAGATACACTTTCAGACACTA

 $\tt CCTCCTGCTCCCCTTGAGGGGATAAGAAGCAAATATGCTTTGGTAAGATTGATGAAGCAATGATATCCCCAAGTATATTCCTATTAAGTTCCGGTTTCACAGAACTTACAACAGGGTAAAACCCCCAAATAATAACTTCCCAG$ 

 $\tt CCTCGCTGCTCCTCTGGGGCCTACTGCTGACCGTGGGAGTGTGGAGTGGGAGGGGAATATGCCAT\\ GGGTTTTTTTTTTGCAGAGCAAGGGCAGGGGACTCTGATGCCTTCAGCTCTGGCCATCCTGAGTGCT\\ TGATCTGCT\\ \tt GGTCTGCT$ 

 $\label{eq:control} \textbf{GCTCTCTGTGTTCTGGTACCGTCCAGCTTACCAACTTTGATTCCTACTGTTACCCAATGGCTTAAATGA\\ \textbf{GTGGGGTAATTAATTCTTATGAAAAAGAAGCAGGCCTGAAAATGCCAAAATATTTTATATGTACTTGGT\\ \textbf{ATTCTACCT}$ 

 $\tt CCTTGTACTGGGGTGCAATGGTGAGGGGGTGACACCCAGAGGGAGTGTCCCCCCTCTTCTGTATTACTTTT\\TGCCTGACCTTTTCAGTAGACTTCAGAGTTGGTCATCATGACTTCCTGAACTCATCTCCTTCCATCTTT\\CTCTCCTGA$ 

 $AGAGGTTGCAGTGAGATCATGCTACTGTACTCCAGCCTGGGTGACAGAACGAGACTCCATCTCA\\ AAAATAAATAAATAAATAAATAAATAAAGCTTTGAACGAATTAAAAAAGAAGAAGATCTCAAGTGAAC\\ AAATGAACT\\$ 

 ${\tt TCTAATGATAGATATTTTGCTCTAATAATTCTCAAGATATTTTTGGGTTCAAATAAAACAACTATTTGAAAGGATGGAGAACAAATTGAGGATACTAATTTAAACAATTGCATTTTGGCAGAACAAGCACATAAGCCTCTCACCCAA}$ 

 $\tt CCCCAGAAAACAAATACACACTCATTTATTTCTTTTATTGCATAACATTATGCATTGTGAGTTTGACC\\ TATGTTGTTACATGTAGTTCTAATTTGTTCATTTCATTGCTGAATAATATTCAATAGGCAATTTTAAA\\ AATTCATCT\\ \tt$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGTCAAGAGTTTGAAGTAAAAACACAAAAATTA\\ GCCAGCCATGGTGGCGCATGCCTGTAGTCCCAGCTACTCAGGAGGCTGAGGTGAGAAAATGGCTTGAAC\\ CTGGGAGGC\\ \end{minipage}$ 

 $\tt CTTTATTTTTTAAGTAGACTTTATTTTGTAGAAAAACTTTAGGTTTACAGAAAATTGAAAGTTACAAATTGATCAGAAAGTTAGACCCCTTCTCCCTCTGCACAGGGTAGTCTCTATTATTTACATCTTATGTCT$ 

 ${\tt CATGCATTTGCTTTTATTCTGAGTTGTTCACAAACTGCTTTGGTGTATGAAGACTGGAATTATTTTTCC}\\ {\tt TAGACTTTTTGAGATTTAAAAAAATCACTTTTATTAATCCTAGTTTACATATAATACAATTCACTAATTT}\\ {\tt TAAGTATAC}\\$ 

 ${\tt GAAAATTAATACAGAAACACTATATAGAAGTTGTGGTTGTTTTTGTTGCTGTTTTTGAGACAGGGTCTCACTCTGTCATCCAGGCTGGAGTGCGGTGGTGCAGTGACAGCTCACTGCAACCTTGGACTTTTGAGCTCAGCCATCC$ 

 ${\tt TCTGGCTCTGTTGCCCAGGTTGGAGTGCAGTGGTGCGATCTTGGCTTACTGCAAACTCTGCCTCCCAGGTTCAAACAATTCTCCTGCCTCAGCCTCCTGAGTAGCTGGGACTACAGGAGTGCACCACCATTTTTGTATTTCCGGTAG$ 

 ${\tt GCAAAGATGTGGAGAAAAGGGAACCCTTGTACACTGTTGTTGGGAATGTAAATTAGTACAGCCACTAGAGAAAAACTGAAAAAACTGAAAAAACTACCATATGATCCAGCAATCCCACTGCTAGGTATATA$ 

 $\label{thm:control} \textbf{GAGATGTGATATAGTTCGGATGTTTGTTCCCTCTAAACCTCATGTTGAAATGTGATTCCCAATGTT}\\ \textbf{GGAGGTGGGGCCTCGTGAGAGGTGATTGGATCATGGGGAAGGATCCCTCATGAATGGCTTAGCACCATC}\\ \textbf{TCCTTGGTG}\\$ 

 $\tt CCCATGCCCAGCTATTTTTAATTTTTGGTAGAGATGGGATCTTGCTGTTGTTCCAAGCTTGTCTCAAA \\ \tt CTCCCATCCTCAAGTGATCCTCCTGCCTTGATCTCCCAGAGAGCTGGGATTACAGGCATCAGCCGTCGC \\ \tt ATCCAGCCT$ 

 ${\tt ATTATTATCTCGGAGTTTCTGTCAGTCAGGAATTGGACAGTAGCATATCTTGAGGTTCTGGGCCACCATATCTCATGCTAATGTGTGACAGTTTAGGTCACAAAAGATGGCTTCTACCTTGCGCCCTCTCGGATCACTTGCTCTGGG$ 

 $\label{eq:taaacataatgaagaatatttcaaatgtttaattgtgctgaactctaa} GTATATTGTGCAGTAACAAACAGCAGGCACGTCTTCAACAAAACTGCTGTTTATTGTTGAAGAAAAAGGCTATGACCTTCA$ 

 $\label{total} TTGTATAAGAATGCTTGTGATTTTTGCACATTGATTTTTGTATCCTGAGACTTTGCTGAAGTTGCTTATC\\ AGCTTAAGGAGATTTTGGGCTGAGATGATGGGGTTTTCTAGATATACAATCATGTCATCTGCAAACAGGGACAATTTG\\$ 

 $\tt CCCACATGCTTGAGGGTAAATCAACTTTATCCTGATGTGATTATTATGCGTTGTATGCCTGTTAAAATATGTTATGTACCTTATAAACAGATACACCTACTATATGCCCACAACAACTTTAAATAATTTTTTATTTTAAAGTATTT$ 

 $AGGAGTTAGAGGCTGCTGTGAGCAGTGATCACTGGTACTCCAGCCTGCATGACAGAGCAAGATTTTATC\\ TCTTAAAATAAAATAAAATGAAAAAGAAAACATGGCCCCAAGGCTAATGTTTTGGGCTGGACCCCAAAA\\ AACTAGGAC\\$ 

 $\label{eq:condition} \begin{tabular}{ll} GCCTCGCTGCCGCCTTGCAGTTTGATCTCAGACTGCTGTGCTAGCAACCAGCGAGACTCCGTGGGCGTA\\ GGACCCTCCGAGCCAGGTAAGGGATGTAATCTCCTGGTGCGCCGTTTTTTAAGCCCGTTGGAAAAGCGC\\ AGTATTCGG\\ \end{tabular}$ 

 $\label{total} TTTGAATTTAGAAACCAAGAATTTGGCTTCTTTATGCTCTCATCTATGAAGAAGTGGTTTTCATCACTA\\ ATAGTAAGAGTGTAACAAACGAAGCACATTCATTAATTCCTCCACACACGTGTCTTCCACAGGGGAGTGGGGGGTTAGG$ 

 $\label{eq:ggtctcagctcag} \textbf{GGGTCTCCAGCTTCACTGTCAGGCTAGAACAGCAACACCGGTTCCTCCCTGGGTCTCCAGCTCAAT}\\ \textbf{GACTCTCAGATTTGAAAGGCAGCACCGGCTCCTCACAAAGTTTCTGGCTCCAAGGCCCTCAAACTAGAA}\\ \textbf{TAGCAGCAG}$ 

 $\tt CCTCTCCCTTAGCCCTCCGATAGGCCCTAGTATGTGTTGTTCCTCTGCATGCGTCCATGTGTTCTTCTTAGCATTAGGTCCCACTTATAAATGAGAACATGTAGAATTGGGTTTTCTGTTCCTGTGTCAGTTTGCATTCCCTGC$ 

 ${\tt CTTCTTATGTATTTTCTACTCTTGGACACAAGTCATAGCATTGCAATGTCTTTTATCTTTTCAATCTT} \\ {\tt ACTCGTGGTTTCTCCAAATATGCCAACATGTGCTTGCAGAATCTCTCCTTTGACAACAATAATGTGGAGCTGAACACT} \\ {\tt CTGAACACT} \\ {\tt CTGAACT} \\ {\tt$ 

 $\label{thm:condition} \textbf{ATTCTCCTGCCTCAGCCTCTGAGTAGCTGAGATTACAGGTGTGTCCACCACCACCTGGCTAAATTTTTTTGTATTTTAGTAGAGGTGGGATTTCACCGTGTTGGTCAGGCTGGTCTCGAACTCCTGACCTCAAATAATCCACCTGC$ 

 $\label{eq:totalcond} \textbf{ATTTCAACCTTTTGCAGTTATTACTTTTTTTTTTTTTTGAGACAAGGTCTCTATCACACAGGCTGTAGTGCAGTGGCACAATCAGGGCTCTCGGCAGCCTTAAACTCCCAGGCTCAATCCTCCTGCCTCAGCCTCCTGAGAAGCTG$ 

 ${\tt TGTGATTCTCTTAGCTTCGTTCTTTTGCTTAGATTTACCTTGGCTATTCAGGCTCTTTTTTGGTTCCATAAAATTTTAAAAATAATTTTTTCGTGTTCTGTGAATAATTTCATTGATAGTATGATAGAAATAGCATTGATCTGTAA$ 

ATCCTGGCCAACCAACATGGTGCAACCCCATCTCTACTAAAATTAACTGGGCATAGTGGCACACGCCTG CAGTTCCAGCTACTCGGGAGGCTGAGGCAGGAGAATCGCTTGAATCTGGGAGGCAGAGGTTGCAGTGAG CTGAGATCA

 $\label{eq:condition} \textbf{ACAGGTAGCTTGTTTCTAGTTTTTATCATGGGATATTCGGTCTTTCACTGTAGTAGTCCTCAATGGACTCTGAAATGGCCCTTAGTAGAATCTAGAAAAATAGTGTTTCCAACCTGCTGAATCAATATAAATGTTTAACTTTTGTGAA$ 

AGACTCTACTGGTCTGTTTCTCTCTAGACCAGGACTGGCAAACTCAAACCTACAGGGGCCCCAGCAAGCC ACATAAAAAAATACATAGGCCAGGTGCAGTGGCTCACGCCTGTAATCCCAACACTTTGAAAGGCTGAGG CAGGAAGAT

 $\tt CTCTTCCTGGGACAGCTTGTGCTTCCTGCCACCCTCCCCAGGGTCATTTCTTATCCTTCCCCAGTTGCCATTTTGATATTTCCTTTTAAGATTTTACTGTTTTTCAAAAGATCCAAAAGTAATTAAAACTCTAGCCATTGAAATGG$ 

 $\label{eq:condition} \textbf{AGCTGACCAACTACCCTTCCCTTACGGCTGGGTATGGTGACTTGGTTCTCACCAATGTGAATTGAAGTAACTCAGGTTCTGGACAGAACCTTTAACTGGCTGACGTGCCTTCATATCTTTTTTCAGAAAAACTTTGCTGCAAGT$ 

TTAATTAATGGATAATTAGATAAATCTTATGAACAATTAACATAGATAAAGAAAAATGCTTTTCTTTTA
CAGTTTTCTTAAAAAAGTCAATTTAGTTCATTTTCAGGTTAATGCTGGCTCTCCAAACTCATAGAAAAAA
TTGTGGATA

 $\label{eq:GAGCCGCATAAGAACCGAGGTCTTCTGATTTCAAGATCAATGTCTTTTCTAAAAAGCAAAATTGACTCCTGGTAGGAAACAGAATAAAACTTGTGCTACCTTAAATGACTGCATTTGCCACTGTGTTGCCTATTTCACAATACACTCAATACACTCCAATACACAATAC$ 

 $\label{thm:condition} \textbf{TGTTTCCTAGGCTATTAAAATAATATTATAATTACATTTGCTCTGGGCTCTTGGAAGACAACTTAAAAT\\ \textbf{GACCCCAACTAATGAAAGGCCAAGGATAACATTCTTGTCCAAAAACTGAGTGACAGCATTAAGCAGAAC\\ \textbf{AGTATTTTC} \end{aligned}$ 

 $\label{thm:condition} \textbf{TGGGCTGGGCTTAGGACTCCCAGGGCCCGGCTCCCTCTGACCTCTGTGAGTGTCCACCCTGAGCTGTCTTGAGCTGTAGGGATGGAGCAGGTCCCAGGTCTTCAATTCAATCCAGCATCAGAGAAAATGTTCAAGAGTCCCGAGGG$ 

 ${\tt GAAGCCCATTTAGTCCTTCGCCATTATTGAATTGGGTCATAGGTCTTTTTCTTATTGGTTTATAACAGC} \\ {\tt TGTTTTACGTTAAAAAAAATAATAATAATATTTTACCTAGTTTATAGTTTGTTGCTTTATTTCTGCTTT} \\ {\tt TTTTTTGGC} \\$ 

 ${\tt TCACTTTTCTGCTTCTTCCAGGTTCTTGATACATATTTGCCAGACTTCAAGATTTCAGAAAAGGGGTGAAAGAAGAAGATTGCAACTTTGAGTCAGACCTGTAGGCCTGATAGACTGATTAAACCACAGGTAAGGCAGTGACCATAGGGCAGTGACCATAGG$ 

AGCAGTGTGTAGAGGGAAATTTATAGCACTAAATGCCCACAAGAGAAAGCAGGAAAGATCCAAAATTGA CACCCTAACATCACAATTAAAAGAACTAGAAAAGCAAGAGCAAACACATTCAAAAGCTAGCAGAAGGCA AGAAATAAC

 $\label{total} TGTAGCACATATCAGAACTTCATTCTTCTTTTTATAGCAATCTGAATATTTTTGTTAATTTGTATACAG\\ TTTCATCACAGGTCTCTTAGTTCCATGAGAAAAGAGACCTGTAAGCCCAAGCAACTCCCATGAAGCAAA\\ GCGTCTTCT\\$ 

 ${\tt GTAATTCCAGTACTTTGAGAGGCTGATGCAGGAGGATCATTTGATCCTAGGACTTTGAGACCAGCCTGGGCAACATAGTGAGAGCTTGTCTCTACAAAAAATTTTTAGCTGCAGGTGGTGGCACATGCCTGTGGTCCCAGCTACTCT$ 

 $\tt CTTGCCTATGTCTGCAGCTAAATTTTACAGGCTGCTCTTTGTTACAGAATGATTTGGGGACTGCTTTTC$   $\tt ATTAAAAGGAAAACCTTACTGAGGACTCCTATACTTTCACCATCTGCCTAAGATTTCATCTTAACTCTT$   $\tt ACATCAGAA$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} $AGGCAGGGTGCAGGCCGAGGTGCAGGCCGGGCTCCGGGCTCCGGGCTCCGGGCTCCGGGCTCCGGGCTCTTAA $AGGAGTGT$ \\ \end{minipage}$ 

 $\label{total} TTGTGAGGCCTCCCCAGCCACGTGGAACTGTGAGTCCATTAAACATCTTTACTTTATAAATTACCCAGTCTTGAGTATATCTTTATTAGCACATGAAAACACTCTAATACAGGTGGACACAGAGAATCAAAACTTACTGGAGCAGAA$ 

 $\label{thm:condition} \textbf{TGTGAAAGCCGGGAGGGAAGCTGGGAGGTAAAGCCACAGGGGTGAGCTGCCCAAGACCATGGGAACCACGCTCTTGCATTAGCATGACCTGGATGTAAAACATGGAGTCAAAAGAGGTCATTTTGGAGCTTTTAAGATTTGAC$ 

 $\label{thm:cagcacccccaccaagcctaacctaaatttttttttttagtagagacggggtttcgccatgt\\ \ TGGCCAGGCTGGTCTCGACCTCAAAAAGCTACAGTATATGCTGAAGGCCAAAGAACCCAAC\\ \ AAGCCCCTC\\$ 

AAAAGATCAATAATTATAATAATATTAGACAAGGTGAAATTTAAATATCAAACTAGGTAAGTGGATTGT TAACATCATAAAAGGCATATTTTATGAAAATCCAATAGCCATAATCTTGTATGGCTAAAAAGCTTAACA CATAAAGCA

 ${\tt AAATGGCCATACTGCCCAAGGTAATTTATAGATTCAATGCCATCCCCATCAAGCTACCAATGACTTTCT}\\ {\tt TCACAGAATTGGAAAAAACTACTTTAAAGTTCATATGGAACCAAAAAACAGCCCACATTGCCAAGACAA}\\ {\tt TCCTAAGCC}\\$ 

 $\label{eq:condition} \textbf{AGGCTTAGATTCTACATTTGTAGTGGGGAACCCTCTGTGGCTAGATTTGCTATTGAAATTCCTAAACAGAATATTTCTTTATTAATATTTTCCTTTCCTGTATTTGAGGGGGCTTAACTTTCCTTTCCTCCCACATAGACCGCTCCT$ 

ACAGTTCTAATTTGATAAGTACAATTGTAATGCATTCAAAGTAAACACACTTTAGGGGTTCAACTAGGA CTTATTTTAAAAAGAAAGCAAATCAATCAATGATTGGCTACTATGGCGATTTTAGGGTGGGCTGGATGG GGATGAAAC

 ${\tt TCAGGAAAGCGGCTGAGTCTGGCTTCAGGGCAGATCCGTGTCCCTCTTGCAGCCTGTTTGCAGCGGGGCTGATTGCAGACGTGGGCCTGTACTTGACAGGGGAATGCTCTTTGTACCCCTAAGGGTCTTCCGACA$ 

 ${\tt CAAAACCAAGTATTTACTATCTGACCCTTTACAGAAAGTCATGGAACCCAGAACTGGATGATCCATGGCAACTTCCATATTCTAGTTTTTCAAAATCCTTTTCTACTGCCATTCTTACTAAGGAGAATTTCAGCTGATAGCGGCA$ 

 ${\tt CAATTTGGTTGATAAGGTGCAGATTCTGAACTAACTTGTAAGCCTTGCCTGGTTTTAGGACAGGTGAAATGGGGGGAATGGTAAGGAGGTTTATAGGTGCCCATGCTGTAGCAGGCGAGTGATAACAGGCTTTAATCCTTTTAAAGC}$ 

 ${\tt TTTTTTTTAGATGGAGTTTTGCTCTTTTGCCCAGGCTGGAGCGAAGTGGTGCAATCTTGGCTCACTACACCTCCGCCTCCCGAGTAGCTGGGATTACAGGTGCCCGCCACCAT}$ 

AGGTTCAAGTGATTCTCCCACCTCAGCCTCCTGAGTAGCTGAGATTACAGGTGTGCACCACCACACTGG ACTAACTTTTTCATTTTTTTTGTAGAGACAAGGTCTCACTATGTTGCCTAGGCTGGTCTTGAACTGCTGG GCTCAAGCA

 $\label{thm:condition} \textbf{TGGCCCCACTCTTCTGGCTTGTAGAGTTTCTGCCGAGAGATCTGCTTTTAGTCTGTTGGGCTTCCC} \\ \textbf{TTTGTGGGTAACCCGACCTTTTCTCTGGCAGCCCTTAACATTTTTCCTTCATTTCAACTTTGGTGAATCCGACAT} \\ \textbf{TCTGACAAT} \\ \\ \textbf{TCTGACAAT} \\ \\ \textbf{TCTGACAAT} \\ \textbf{TCTGACAATA } \\$ 

CACAACACATGGAAATTATGGGAGCTACAAGATGAGATTTGGATTGGGACACAGAGCCAAACCATATTA GCAACAAAGCTGCATGCCCTGCACATGTATCCTGGAACTTAAAATAAAATAAAATAAAATTAAAATTAAAATGAAAATGA

 ${\tt TTAAGAGCAATGTTTTGTGGGCAGGGGTGGATCTCACAAAGTGCATTCTCAAGGGTGGGGAGAATTACAGAGAACCTTCTTAAGGGTGGGGAGAATTACAAAGTACATTGATCAGTTAGGGTGGGGCAGGAACAAATCACAATGGTG$ 

 ${\tt ATTTGTTACTGCGTTTTTCACTTTTCAGACTTTTAACGCTTTTTTGCCCAACTGTACCGAGAA}\\ {\tt AAAGCTATACTGCCTAAAATGAGCCAGGATTGAGGTATCTCTGAAAGTCTTTTCGGAGACTCATTTACTTTCTCCCCA}\\ {\tt TTCTCCCCA}\\ {\tt CTCTCCCCA}\\ {\tt CTCTCCCCCA}\\ {\tt CTCTCCCC$ 

GCGAGGAGCGTCTCTGCCCGGCCGCCATCCCATCTAGGAAGCGAGGAGCGCCTCTTCCCGGCTGCCATCCCATCTAGGAACTGAGGAGCGCCTCTCTGCCCGGCCGCCCATCGTCTGAGATGTGGGGAGCACCTCTGCCCCCACCGCCCT

 $AAATTTAATTCAGAAAATTGGGTGCTTATAAAACGTTTGGAAGAGTTGGAGGAGAAAGGATCAGAGTCT\\GTCCCTAGTGTTCAGGTTTTCTGGCTGTGCTTCAGAAACTCAGCAATTTCCTCCTGACGCAGAAGTCAGGAGGTTCCA\\GAGGTTCCA$ 

AGAGGGAAGTGCACAAAATGGGTTCAGAGGAAGAATGGGTGGATTTTCATGTCTGGATTCATAGTGAGGAATACAAAGAAGAAGAAGAAATAAAGGGATCTTGAATCTGGGAAAATTATTTCCATGATCACCAGTACAAAGATTGGAAA

 ${\tt GTATCCAATGTGAGATTTCTTAGCCCTTGGCTCCCTCCTCCCCTGCTTCTGGGTCTCCAGAGTTCATGATTATCACTCATGCCTTTGTGTATCCATAGCTTAGCTCCCACTTATAAGTGAGAACATACAGTATTTGATTTCTATTCC$ 

 $\label{thm:condition} TTTTTGAGCAAACTGGAAAGTTAACTTCTCTACATTAGCAGTAAACAAAAGGAATTAGTTGAAAAGTTA\\ TGATAACATTTACAATTTCCTTTTAAAAACTTCAAGCCTCAGACCAGGCGCGGTGGCTCACACCTGTAA\\ TCCTAGCAC$ 

 $\label{eq:control} \textbf{ATGCAGTAAGAATTTAGGTTCTATATTCTGACAGGATGTAGTGATAGTGTTTCAACTGCGATTGCAACAGCTGAACAGTGAACGCTACAAATCAGAATGTAATGCCATTTCCC$ 

ATAATTATTCATAAAATATTAATATACTATATTTACCAAAGTTAATTATAAAAACAATTTATAATTCTG
TCCTCTGATATAACACTTAAACTCAATTATTAAAATCTTAGCCGGGCATGGTGGCATGTGCCTGTAGTA
TCAGCTACT

ATGCAGAAAACTGAAACTGGATCCCTTCTTTACACCTTATACAAAAATCAACTCAATATGCATTAAAGA CTTAAACATGAGACCTAATACCATAAAAACCCTAGAAGAAAACCTAGGCAATACCATTCAGGACATAGG CATGGGCAA

 $\label{total} TTCAGTATCAGAAGTCTCTTGCATTCTCAATGATGTATTTTTCAATGACAGAAGAATGTTCTTCTAGAGCAGGAACTGTGCAAACTATGATTCATGGGCCAAATCTGGCCCCACCACCTATTTTTGTAAATGAAGTGTATTTATAAAT$ 

 $\tt CTGGGACTACAGGCGCCCACCACCCCCAGCTAATTTTTCTATTTTCAGTAGAGACGGGGTTTCACGTGTTAGCCAGGATGGTCGCGATCTCCTGACCTCGATCACAAAGTTGATTATCTTTTCACTTTTCAAGTTCTTTAGA$ 

 ${\tt TCACATGATTGCAAGGTCCCACAATAGGCCATCTGCGAGCTAAGGAGCAAGGAGGAGCCAGTCCAAGTCCCAAAACTAAAGAACTTGGAGTCTGATGTTCAAAGGCAGGAAGCATCCAGCATGGGAGAAAGATGTAGGCTGGGAGACT$ 

 ${\tt TAGCTGGACTATAGGTACTCACCACCACCACCACCTCAGCTGGGATAATCTATTTTAAGGTTGGGTAAGTGGGATAGACTTATCTCTAATTTTAATATCTCACTTAGAATTTCTCACTGTGGCAAAAGATAAATGTTTTTCTCAGACCC$ 

 ${\tt CAGATGTTATCAGCAGCTGAACAGCATCTACAGAAACCAGCTGCAAAGACAGAAATAGAACAACTGATT}\\ {\tt TGGTGGAGAGATCCAATAACAAAAAGTTGGGAAAATAGGTAAAATAACTTGGGGTAGAGGTTATGCT}\\ {\tt TGTATTTCT}\\$ 

 ${\tt GATGTTTTCGTTTTTTTTTTTTTTTTTTTTTGGAGATGGATTCTTGCTCTTTTCATCCAGGCTGGAGTGCAGTGGCACGATCTTGGCTCACTGCCAACCTCTGCCTCTCGAGTTCAAGAGATTCTCCTGCCTTAGCCTCCCAAATAGC$ 

 $AGAGAAACAATCAACAAAATGAAAAGACAACATATGATATAAGAAAAGTATTTGCAAACCTACATCCAA\\ TAAGGGATTAGTATCCAAAATATAGAAGGAGCCACTACAACTCAATAGCAAAAATAAGCAAAAAGCATG\\ ATTTTAAAA$ 

 $\label{eq:total} ATAGCCTAGATGCCCAAAAGCCAGGACTGGCTGAATCCGTTGCGTTTTGGCGTCCCTGGAAATGTTCCGCAGTCATGAAGGAGGAGGCATTTGCACAGAATTGGAAAGATGCCCAGGACTTGGGGCACATCAAGCCTAACCCCATGT$ 

 $\label{eq:additation} \textbf{AAGTCAATATCTTTTGATAGATAATCTCTTCTAATATTAAGCTTAAAAAGCAATGAGAGAGCTTT\\ \textbf{TAAGAAGACTTTAAATCGCTGCTAAGGGACTTAGAAGACTTGGGGAAAAAAGAATAATTGCATGACGTC\\ \textbf{ACTTTTTGA} \\ \label{eq:additation} \end{aligned}$ 

AGAAGAAAGAAAATGCATCCAAATTGGAAAGGAAGAAGGAAAATTATTATTCATAGATTATTATGA TCTTAGAAAACCCTAAAGATTCCACAAAAAACCCTTTGGAACTACTAAACAAATTTGGCAAAGCAGCAG GACACAAAA

TACCACAGAAATACAAAAGATCATTTAAGACTACTATGAACACCTTTATGTACATAAACTAGAAAACCT AGAGGAGATGGATAAATTCCTGGAAATATACAACCCTCCTAGATTAAACCAGACCAATAACAAGCAGTG AGATTGAAA

GGTGGCACGTTATCTGTAATCCCAGCTACTCAGGAGGCTGAGGCAGGAGAATCACTTGAACCTGGGAGA TAGAGGTTGCAGTGAGCCGAGATCACGCCACTGCACACTCCAGCCTGGGCAACAAGAGTGAAACTCCGT CTCAAAAAC

 $\tt CTTCTTTTTAAACATTGTTATTCAAATCATTATTGCAACTGACTATGGAACAAAAACATCAAAAATATTTTTTAATGTTTTTGAATTATCCTTTTGGTGTCCTAGAAGTTTTTTGTGATAGTCCAATGCAGAGTAATGAGACTCTCA$ 

 ${\tt CAGCACATCAAAAAGCTTATCCACCATGATCAAGTTGGCTTCATCCCGGAGATGCAAGGCTGGTTCAACATATGCAAATCAATAAATGTAATCCATCATATAAACAGAACAAAAGACAAAAACCACATGATTATCTCAATAGATGCA}\\$ 

 ${\tt TGGTTTGCCTTCTCAGTGGCGGTCACAAGACTGCATGAAAGAACAGTCTGGCTGAAAAGCAAAATTTAGAACAATATTAAAAAACATAGAGCCAAAGAGCCAGTTTCAACAAGATGAGCTTTCCATAGCATAGCTTTAT$ 

 ${\tt CGTGGTTGGCACAAGCCTGTTATCCTAGTTACTCAGGAGGCTGAGACAGGAGAATTGCTTGAACCTGGGAGCGGATGTTGCAGTGAGCCAAGATCGTACCATTGCACTCCAGCCTTGGTGACAGAGTGAGACTCTGTCTCAAAAAAA$ 

 ${\tt GAGAAGAGGCTTCAGACGATCAAATTACTCTGAGCTATGGGAGGACATTCAAACCAAAGGCGAAGAGGTGAAAAAGTTTGAAAAAATTTAGAAGAATGTATAACTAGAATAACCAATACAGAGAAGTGCTTAAAGGAGCTGATGG$ 

 $\label{thm:condition} \textbf{TGCTGGGCTCAGTGGCCTGCAATCCCAGCACTTTGGGAGGCCGAAGTGGGCTGATCACGAGGTCAGGAATTTGAGACCAGCCTGGCCAGCATGGTGAAACCCTATCTTTACTAAAAATACAAAAATTAGCCAGGCATGGTG\\$ 

 $\label{thm:condition} {\tt GAGGCTGAGCAGGCTGATCACCTGAGGTCAGGAGTTCAAGACCAGGCTGGCCAACATAGTGAAACCCTGTCTCTACTAAAAATACAAAACTTAGCCAGGCCTGCAGTTCCAGCTACTAGGGAGGCTAAGGTGTGAGGATCGCTCGA$ 

 $\label{thm:condition} TTACTGAACTATAGGTGCAAGGACACGTCTCCAGTTACTTTGCATCTGTAATCCACAAAGATTCTGGGC\\ AGCTGTATTATCATAGCTTGGTTTAAATAAACTATGTAGTAACAATGAACAACAAGAACAAAAGAAATA\\ ATAGCTTGC$ 

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AGCATCATTCTGATACCAAAGCCAGACAGAGACACAACAAAAAAAGGAATTTTAGACCAATATCCTTG
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ATCCACCAT

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A GAATGCTGTGGTGTGAGAACTCTTGCTATGCCAATAATAATAATAAACATTAGGCTGGGTGAGGTGGCTCACGCCTGTAATCCCAGGACTTTAGAAGGCCGAGACCAGAGGATTGCTTGAGCCCAGGAGTTCAAGACCATC

 ${\tt TGGCTGCATTGTTGTGGGATCAGCAGGTGCCCCCTTGTGTTCTTATAGCCTTGTAAAGGTTTTTCCGTAAAGCCACCTATCGATTATGTTGGCTCTTGCATTTTTTCTTTGACTCAGTTGCATGACTTCTTTTGCAGTCATTTTT$ 

 $\label{eq:condition} A CAACAGGTGCTGGAGAGGATGTGGACAAATAGGAACACTTTTACACTGTTGGTGGGACTGTAAACTAGTCAACCATTGTGGAAGTCAGTGTGGCGATTCCTCAGGGATCTAGAACTAGAAATACCATTTGACCCGGCCATCCCAT$ 

 ${\tt TAGAGATGGGGCCCTGCTGGCCTGCACAGAAGGGACAACGACCACCATTTGGGGTCCTTTTAGCATGGTGGGCTGCCCTGGCCGAGGTGGCCAAGATGGCACCTGTTTCCTGCCTCAGAAGAAAAGGCACTGACGCACTGACCCTTT$ 

GGTAGACTGGATAAAGAAATGTGATACATACACACAATGGAATACTATGCAGCCATGAAAAAGAATGA GATCATGTCCTTTGCAGAAACATGGTGGAGCTGGAAGCCATCATCCTTAGCAAACTAATGCAGGAACAG AAACCAAA

 ${\tt CCAAGCCAGAGTACATACCCCCACATGGTAGAATTAAAGATATTTTAGGCCTGGGCACGGTGGCTCATGCTGAATCCCAGCACTTTGGGAAGCTGAGGATAGTGGATCACGTGAGGCCAGGAGTTCGAGACCAGCCTGGCCAACA}\\$ 

 $\tt CTGACTGCAAACTCTGCCGCCCAGGTTCAAGTGATTCTCTTGCCTCCACCTCCCGAGTACCTGGTACTAGAGGGGATTAGTCAGAGGTCCGGGCTAAGACCAGTCCTGGCCAGGGCATCAACAGGATAGTCTCTGGAGGCCGGGATTCA$ 

 $\label{thm:concomposition} \textbf{GTGTTTTCAACCAACAAATGCCTATTTGTTCCTTCAGGGGCCACTGCAAATGTCACCTCCTCATCACAGCCTTCCTGGCTGTGTGTAGAGTTTTCCACTCTCTTAGCTCTAAATACCACTTCTGCTAAAGAGCTCACATTTTTTACA$ 

AAAGAGTTTCACTCTTGTTGCTCAGGCTGGGGTGCAATGGCGCCATCTCAGCTCACTGCGACCTACGCC TCCTGGGTTCAAGCGATTCTCCTGCCTCAGCCTCCCAAGTAGCTGGGATTACAGGCATGCGCCACCACA CCAGCTAAT

 $\tt CCACTTTCCTATTTGTTTCTCTGCCTTTTAAAAAAATTCATGAAAAGAAAACACTTAGCAACTGTTTGT\\ ATAATTCTTCTTGACAGACGTGGACAATGATTTATTATTATTATTATTATTATTATTATTAGGGTAC\\ ATGTGCACA$ 

 ${\tt TTTGTATTCTAGTAGAGACGGGGTTTCACTATGTTGGCCGGGCTGGTCTTGAACTCCTGACCTCAAGTTGATACATCTGCCTTGGCCTCCCAAAGTGCTGGGATTGCAGGTGTGAGCCGCTGCGCCTGGCCAATCATCATTGATATT$ 

 $\tt CTGCTTGACCTAGAATTAACGTAAAGAGATTCATCAAAATCTCACAGAATAATGGTGGATTTATCCTTGAGGTTCTACAATGTTTTATACTTCTTAAGGCTACTTTATTAAGCATATATAACATATTTACAATTATTAAGCCTTCTTGA$ 

 $\label{thm:condition} \textbf{GACCTGGGCTCAGCCTCCTGAGTAGCTGGGACTGCAAGTGCATGCCACCACCACCACCTCAGCTAATTTTTTAAAACTTTTTTGTAAAGACAGGGTCTTGCTATGTTGCCCAGGCTGGTCTTGAACCTCTAGGCTC$ 

 ${\tt AAATGTTATTTCAATTATATTGAATCTGTAAGTCAATTTGGGAACAAATGGCATCTATAATGCT}\\ {\tt GAGAGTGAGTCTTTACTCATGAAAACAATGTCTATATATTTTAGTTCTTTTAATGTCATTTTAAGGT}\\ {\tt TTTATAATT}\\$ 

 ${\tt AAGCAAATCATGAGGTCAGGAGTTCGAGACCAGCCCGACCAACACAGTGAAACCCCGTCTTTACTAAAA} \\ {\tt ATACAAATATAAGCTGGGTGTGGTGGCACGTGCCTGTAATCCCAGCTACTCAGGAAGCTAAGGCAGGAGAATTGCTTG} \\ {\tt AATTGCTTG} \\$ 

 ${\tt GAGGTCAGGAGTTCAGGACTATCCTGGGCAACATAATGAGACCCTGTCTTTACTAAAAATAAAAACTAA} \\ {\tt AATATAGGCAGGTGTGGTGCGTGCCTGTAGTCCCAGCTACTTGGGAGGTGGAGGTGGGAAGATTGCTGTGCCCA} \\ {\tt TTGTGCCCA} \\$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGCTGTAACCAGGCCTCAATCCCTGGGTCTCCATTGGTTTGATGGGATGTTCCCTTGC \\ ACCTCTTCGGCTCTGCGGGAATTCAGAGGAAGGGTGTCCAATCAGGTCAGAGAAAGGCTTCCCTA \\ AATGAGCCA \\ \end{minipage}$ 

 ${\tt TGTAACAAACTGCATGGCTCATGCACCTGGAAGGTCACAATAAGTGAGCAGAATGGAGAGGAGGGGTCGGCCCATAAAAGGGAAGAAGTTTCATGATTGGGAAATCGAAACTTAAGCGGGGAAGGAGACGGGGTATAACCTTATAA$ 

 $\tt CTGAACATCCTGCTCCTGAATGACTACTGGGTACATAACGAAATGAAGGCACAAAGAAGATGTTCTTT\\ GAAACCAATGAGAACAAAGACACAACATACCAGAATCTCTGGGACACATTTAAAGCAGTGTGTAGAGGG\\ AAATTTATA$ 

 $AAGTGATGATTAAATCTCGGGATTTTTAATTTTTGAGTGTTGACAACTAATTAGAACATTTTTAAAGCA\\GGTCAAAGCACGGCAGGCTAACTGGCCCCACGCACAACTTGCAAGGTGGGGCGCACCAGGCTCACTGC\\ACAGCCCAT$ 

 $\tt CGCTCTGTCACCCAGGCTGGAGTGCAGTGGCACCTCGCAGGTTCCAGTGATTCTCCTGCCTCAGCCTGGGATTACAGGCACCTGCCACCCCAGCCTAATTTTTGTATTATTAGTAGAGATGGGGTTCACCACGTTGGCCAGGCT$ 

 $A GAGTGTGAGTCTTTTCAAGTGCACTAATTGTGTTATGTTGTGGATAGAAACCATGAAAAACCGATGTT\\TTGAAAGTCTCCATCTTCGGAGAATTTTACTTCTAAGCTAATTAAACATCTGTTTCATCCTGAGATTTG\\GATCAAAAC\\$ 

 $\label{thm:condition} {\tt GTAGTAGAGACAAGGTTTCACCATATTGGTCAGGCTGGTCTTGAACTCCTGACCTTAGATGATCCACCT}\\ {\tt GCCTCGGCTTCCCAAAGTGCTGGGATTACAGGCATGAACCACCACGTCTGGCCTTACCCACCTCTTTTT}\\ {\tt TCTCATCCC}\\$ 

 ${\tt CAGTGCCCCCAATATGAAGTTGGGGCTTTTGCACCCCAGGTGGAATTTTCTTTTCCTTAGGTTTATAT} \\ {\tt TCAGGAATGTCCTCAGAATTTGGCAGATGTCTATGAGGCCAATGGCAAACAGTGCTCAATGGCAAAGGGCTTATTTCTTA} \\ {\tt CTATTTCTA} \\ {\tt CTATTTCA} \\$ 

 $\label{temperature} \textbf{TCCCCAGACTCCTGTCTGATTTATATGGTTTGGGATGTGACTGAGGCATCAGGATGTACATTTGGGAACCCCTGCTGTGGGATTGTAAGCTCCATGAGGGTAAGATTCGTGTCTATCTTGCTCCCTATTGTATTTCCAGTCTTTGGA$ 

 $\label{thm:constraint} \textbf{GTTGAATTTTTCTGCATCTATTGAGATAATCATATGGTTTTTGTTTTTTGGTTCTGTTTTATATGCTGGATTAATTCTTAAGAGGTGCCCTAGGATTTATGGAATAGCAAATGTGCATTGGCTTGTAACAAGAAAG$ 

 ${\tt TCACTTGAGGCCAGGAATTGGAGACCAGCCTGGCCAACATGGTGAAACCCCACTTCAGCCTCCTGAGTAGCCCTAAAAAATATAAAAATTAGCCAGGTGTGGTGGCGTGCGCCTATAGTCCCTGCCACTCGGGAGGCTGAGCATGAC$ 

 $\tt GTCCCCATTTCAATTAAGAAATTTCAAGTTTTATAAGGGATCAATGGGTGGCACCACATCATTAATTT$   $\tt AATGAGAAAGTTTATATGAGTGTTCAATTCCTCGGTCAATTCTCTTTTCCCTTAATTTGTAAAATTTTCA$   $\tt GGAAAAAAC$ 

 ${\tt TAGTTAAAGCAATAAAACAAGAAGAACATTGAAATGTAACTATTAGAAAAAAGAAAATGTATTATGAACACTTACTCATGACATTACCACACATCTCAAATCCTAAGACAATCAAATAAAAATGTGTTAATTTGAAGATTGAGTAT$ 

 ${\tt GATCCCATTTGTCTATTTTGGCTTTTGTTGCCACTGCTTTTGGTGTTTTAGACATGAAGTCCTTGCCCATGCCTATATCCTGAATGGTACTGCCTAGGTTTTCTTCTAGGGTTTTTATGGTTTTAGGTCTAACATTTAAGGTCTTTAA$ 

 $\label{thm:constraint} {\tt GTGGATGTTCTCAAAGAACTCAAAACAGAACTACCATTTGACCTAGCAATTCCATTACTGGGTATATA} \\ {\tt TACAAAAGAAAATCAATAATTCTACCAAAAAGACACATGTACTTGTATGTTCATTGCAGCACTAGTTACAATAGCGAA} \\ {\tt AATAGCGAA} \\$ 

 ${\tt CCATTGGAAGGTAGCAAATTCAATTTAATTCACGTTTAATAAAAGAAAATTATTCAATTATCTCTGTTT}\\ {\tt TCACAGCTCAAATTTCTATATACATGAGGTAAAGGCAGATTCCTAACAATATGGGTGAGACAAAATAAT}\\ {\tt TATGAGAGT}\\$ 

 $\label{thm:control} \textbf{GTGCTGGATTCGGTTTGCCAGTATTTATTGAGGATTTTTGCATCAATGTTCATCAAGGATATTGGTCAAAAATTCTCTTTTTTGGTTGTCTCTGCCCGGCTTTGGTATCAGAATGATGCTGGCCTCATAAAATGAGGTTAGG$ 

 ${\tt TAAGTGTCCAAATGAAGACATCAGAGCCTGTACTCTATTTCCCTCTTTTTTATTATAAATTTTTCAAACATGCAGAAAAGTTGGAAGAGTAATACAATAATTAACCATATATGTCTAGATTAAATATTAATACCTTGCTTATTTTT$ 

 ${\tt TTATTCATTTTTGTGGATTTATCTACCTTTGGTCTTTGCTGTTGGTGACCTTCTGATGGGGTTTTTGTGTGACCATCCTTTTTGTTGATGTTCATGCTATTCCTTTCTGTTAGTTTTCCTTCTGTCAGGCTCCTCTGCTGCAC$ 

 $\tt CTCATAGATTCTACAAACAGTGAGTTTTCAAGCATCTGAAGCAAAATAAAGGTTTAACTTTGTAAGATGATCCTGCACATTATTGCTGGATATTCGGTTTTTCACTGTAGGCATCAATTTGCTCTGAAATATCCTATTGAAGATTT$ 

 $\label{thm:condition} \textbf{ATTTTGTTTGTTTTTTGAGACGGAGTCTCGCTGTTGTCCCAGGCTGGAGTGCAGTGCAGTCTCTCGGGTTCAAGCGATTCTCGTGCCTCAGCCTCCCTAGTAGCTGGGATTCAAGCGATTCTCGTGCCTCAGCCTCCCTAGTAGCTGGGATTACAGGT$ 

 ${\tt ATTGTTTTTGATGTGCTATTGGATGTGATTTGCTAGTATTAAGATGAGGACTTTTACCTCTATGTTC} \\ {\tt ATTAAAGATACTGCCTGTGGTTTTCTTTTTTTTTTGTTGAGTCTTTCTCCGGTTTTTGGAATCAGGATAATGCTGATCTTAT} \\ {\tt TGATCTTAT} \\$ 

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AACCAGCTCTCAAAAAAAGCAAAAAAAAAAAAAAGTTTTTAAAAAGCCCCGATTTTTAGCATTTTGCCAGTTT TCATAGTGTAAATCTTCCTGCCGTGGTCAACTTCAAGCCATCTATGTGACTTTACTGAATGTAACATTG GGAAGAGAG ATTTCTAAAATTAAACCCTACTTGGTCATGATATTTTTATATATGATGATGGATTCCATTTTAAAATAA
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ATGAGATAT

 $ATAACAGCTTTATTGAGATAAAATTCACATGCCATACAATTCACCCATTTAAAGTGTACAATTCAGGCA\\GGGTGTGGTGGCTCATGCCTGTAATCCTGGCACTTTGGGAGGCCGAGGCGGGCAGATCACTTGAGGTCA\\GGAGTTCGA$ 

ATTAGAAAATTCTTGATTTGTCCTTTCTGACTTCTTGTACATATTTGTTAATCAGGAATTTTGAAATTC
ATTTCTTCAAAGCTTCCTCAAGTCTGGGAGTGTTGCCAATTTGCATGGAAGAACAACATTTCATGACTG
CATTCATAA

 $\label{thm:condition} {\tt GTGCTCAAAGCCAGGCATGTGCCTGTAATCCCAGCACTTTGGGAGCCCAAGGCGGGCAGATCACCAGGCCAACACGATGAAACCCCATCTCTACTAAAAATACAGAAAATTAGC}$ 

 ${\tt GTCTGTTTGTAGGAGGCAGGAGGAGCAGTAAATAAATACAAGTAGTTGGGTGTAGTGGCTCGCGCCTGTAATCCCAGCACTTTGGGAGGCTGAGGCAGGAGGATTGCTTGAGCCCAGGAGTTTGAGACCAGCCTGAGCAACATAGT$ 

GGACACGCTCCCAACCTGAAAATAAAATTTAAAAACAATTCTACTTAAAGTAGCAGCAAAAAGAATAA
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AAAAGTTAA

 ${\tt GTTGAGCCCAGGAGTTCAAGACCAGTCTCTGCAATATAGTGAGACACATATCTACAAAAAAATTTTAATTAGGTGGGCATATTGGTGCATGCCTGTGGTCTCAGCTTACTACATAGGCTGAGGAGGAGGATCACTTGAGCCCAG$ 

 $\tt CTGGGATTACAGGCGTGAGCCACCGCGCCCGGGCCCGGGAGATATATTTATATGATATACTTTGATATTT$   $\tt CTGAGCAGATCTAAAAAATTTCACTTATCTAATTTTCTGAATCTGTTACGTGTCTTTAAAAAAACTACAAG$   $\tt CTGAATCTA$ 

AAAAAACTACCTTAAAGTTCATATGGAACCAAAAAAGAGCCTGCATTGCCAAGTCAATCCTAAGCCAAA AGAACAAAGCTGGAAGCATCACGCTACCTGACTTCAAACTATACTACAAGGCTACAGTAACCAAAACAG CATGGTACT

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 ${\tt TATAACCTGATGACAATGTGCCTAGGTGATGATCTTTCTGCGATAAATTTCCCAGGTGTTCTTTGTGCTTCTTGTATTTTGGATGTTTAGATCTCTAGCAAGGCTGGAGAAGTTTTCCTTGATTATTCCCCCAAATATATTTTCCAAA}$ 

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 $\label{totalagar} TCTTAAAGATGGAACAATTGACAATAGACACCTGTCATTCTTTTTTCCCTTCTTATTTTGGAAGCTC\\ TGCTAGATGCTGCTGTCCGCAAGTACTGACCTTGCCTTTTCTGATTTTCATTAAAAAGAAACTCATAGC\\ AACAAGGTA$ 

 $\label{eq:condition} \textbf{AGGGAGTCTATTCTTGCCTGAATTTAAATCCTTCATGATTAGATGAAAAATATAATGTTATGTTTATACACAAAAGATGATATCTACCTGCCTTCAGCAGGATGCCAGATCATGAAGGCTGAGTCATCCACTCTTTCTCATTTGCCCT$ 

 ${\tt CACCTCAGCCTCCCAAAGTGTTGGGATTGCAGGCGTGCACCACCATGCCTGGCCTACATATCAGATTCTTGAAAACATAGAGAATTCAGTGTCCAAAAGTTGGACAGTTATCCTACACCATGGGTTACAAATGTCAGTGCTTCAGGG}\\$ 

 $\tt CTGCTATAGCTTGCGCACAATGCATCTTCCGTCCGCTTAGCTTTTCTGCCCCCATTTCCTACAGCCGGGGAGGCTCGGGTGCAGTGTCTCCTCGCTCCTGCTTCCTGACCCAGAGCCCAGACCTGGGACTTCCCAAAAGCCCCCA$ 

 ${\tt AATGTATATTTCTTTACCAAAAGGTGTATAATATATTTTTTTAGAGTCTTACTGTGCCACACAGGCTGGAATGCAGTGGCACAATCATGGCTCACTGCAGCCTAGAATTCCTGGGCTCAAGAGATCTTCTCTCCCTGGGCTTTT$ 

 ${\tt TAGCAAAGATATGGGACATTTGTCTAAATTTTGTAATGGCTATAGTTTTTAATCTCTTTTTTTAAGATGGAATCTCGCTCTGTCACCCAGGCTGGAGTGCAGGGGTGCGATCTCAGCTCACTGCAACCTCTGCCTCCTGGGTTCAA$ 

ATAAAAATTAGCCAGGCATGATGGCCCATGCCTGTAATCCCAGCTACTTGAGAGGCTGAGGCACAAGAA TCACTTGAACCTGGGAGGCGGAGGTTGCAGTAAGCCAAGATTGTGCTGCTGCACTCCAACCTAGGGGGC AAAGCAAGA

 ${\tt TCCTTTCCCCACTTTATGTTTCTATTTGCTTTATTGAAGATCTGTTGGCTGTAAGTATTTGGGTTTATTTCTGGGTTCTCTATTCTGTTCCATTGGTCTATTTTCTACCAGTACCATGCTGTTTTTGGTGACTATTGGCC$ 

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 ${\tt CCTAGGCAATACCATTCAGGCCATAGGCATGGGCGAGGACTTCATGACTAAAAACACCAAAAGCAATGGCAAAAAGCCAAAATTGACAAATTGACAAATTAAACTAAAGAGCTTCTGCACAGCAAAAGAAACTACCATCAGAAT$ 

 $\label{eq:condition} \textbf{AGTTTGGAGTTGCAGTGGTGTGATCCAGGCTGCAACCTCTGCCTCCAGGTTCAAGCAATTCTCCTGCCTCAGCCTCAAGTAGCTGGGATTACAGGCATATGCCACCACGCCCAGCTAATTTTTGTATTTTTAGTAGAGA$ 

 ${\tt TAACAGATATACGCAGTTCAAGTTTTTAGTGTTGACTCCAGCCGAGATATATCGGAGGCAAGAAGAATTTTGCAAAGGATTCATGAATTATCCAAAGTTAAACATGTTATATCTAACCAAGCCAGACCTAGAACACAT$ 

 $\label{eq:condition} \textbf{ATTTACAGAGCTCCTGGTGTCCACTTAGAGAGGGGTGGTACTGAAAAGTGAGCACTCTCCGGCTAAAGAGATTTCTCTCTTTCTATAAATCAAGAGGACTTTTGGAAACCTGCTTGCAGGTTATACTTGTTCCCTTTTTATGAATG$ 

 $\label{eq:gcaga} \textbf{GGCAGGAGATCACTTTAACCCGGGAGATGGAGGTTGCAGTGAGCTGAGATCGTGCCATTGCACTCCAGCCCTGGGCAACAGAGTGAAGCTCCATCTCAAGAACAGTTTTGATGAAATTGTCCCTAGATTTGCATCTGGCATCTAGC$ 

 $\label{thm:condition} \begin{tabular}{l} GCTCAGGAGTTTGAGACCAGCCTGGGCAACATGGTGAAACCCTGTCTCTACTTAAAAAAAGAAAAAAGAAAAAAGATCAATAAAATTAGCTGGGTATAGTGGTGGGCACCTGTAATCCCAGCTACTTGGGAGGCTGAGGCGGGAGATTGCTT\\ \end{tabular}$ 

 ${\tt CAGCCATGGGAATAAAAGCAGAGCTCCCTTTTGGAACTCCATGGTCATCGTCATAAACAAGAACCTCCCAGACATCAGTGGTGGAATGGGGGCCTGTTCAGCTCTTGGAAACAAAGGCTTTATTCTGAATCTTTTCCCGACTGATAA}$ 

GTCCACCTCCAAAACCCGGAACATCCAGTCCTAGACCAGGCAAACCACTGTTTCCAACTGAAGGCATACCAGGCCTAGCATCACCAAAGGCCCCGCCTCCTAATCCTGGAGGAGGGATTGGTGGCCCAAAGGCATTTG

 $\tt CGGGTTCTCCCTGTGGGCCACCCTTCTGGGATGAATGGCTCTGCTCTCAGAAACTGGATACAAAGTTCTTTAAAAACCCAGCTCACAGATAACACCTGTATCATAAGCAGTGGCCCCTTTGCCACCTTCCTGCTGCCTCCAAGCTC$ 

 $\label{thm:condition} \textbf{TGGCCAGGTATGGTGGCTCAATCCCAGCACTTTGGGAGGGTGAGGGGGAGGATCATTTGGGCCAGGAGTTCGAGATCAGCCTGGGCAACATAGTGACACCCCATCTCTACCAAAAAAATTCCTTTTAGTCATCATGTA$ 

GAGTCAGGTGGATCATGAGGTCAGGAGATCGAGACCATCCTGGCCAACACGGTGAAACCCCGTCTCTAC
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CGGGAGAT

 ${\tt TATAGCTGTTCAAATAACTGTTTACCCATATGTTGGAGGTTTGCATTTCTGCTACATTGTGTTTTATTGGAAAACTTGTCTTTTATTGCCAGAACTAAACTGTTTTTATTACTGTAGCTTTGTAATGTGCTTTGAAATTAGAAAA$ 

 $\label{thm:condition} \textbf{GTTGAGGAATTTTGCATCTATGTTCATCAGGGATATTGGTCTGTAGGTTTTCTATTTTTGTTGTGTCCTT\\ \textbf{GCCTGGCTCTGGTGTCACGGTGATGCTGGCTTTGTAGGGTGTTAGGGATGATTCCCTTCTTTTTGATTT\\ \textbf{TTTGGAAAG} \\$ 

 $AGTCTTGGGAGGGTGTATGTCGAGGAATTTATCCATTTCTTCTAGATTTTCTAGTTTATTTGCATAG\\ AGGTGTTTGTAGTATTCTCTGATGGTAGTTTGTATTTCTGTGGGATCGGTGGTGATATCCCCTTTATCA\\ TTTTTTATT\\$ 

 $\label{eq:condition} \textbf{ACTGCAGCCTTGACCTCCTGGGCTCAAGTGGTCCCCACCCCAGTCTCCTGAGTAGATGGGACTATAGGCATGCGTGGCCACATCCAGTTAATTTTTTAATTTTTTCGTAGAGATCAAGTTTCACCATGTTGCCTGGGCTGGTCTC$ 

 $\tt CCTGCAGAAAAGAGATGCAACAGGGGATAGAAAAAGAAAAAGCCTTGGCAGGGAGTGAGAACTCCTGGGTCTTGTCCCAGCTCCACTACTGACTTCCGGTGTGACATCAGACAACTTTCTGCTCCTCTTTGAGCTTCAGTTTTCC$ 

GCAAAAGAGAATAAAGTACTTAGGAATACAGTTAACTATAGAGGTTAAAGGTCTCTACAGTGAGAATTA CAAAACACTGCTGAAAGAAATCAGAGATAACAGAAACAAATGGAAAAACATTTCATACTCATGGATAGG AAGAATCAA

AAATTGCATTGAGGATGATAAATAGTTTCTCATAGAATGGCAGGAAAAAATTGAACAAACTTCAAAAGA AAAATAACAGATTACAACCTTTCTCCCTAAAAAAGAATAAAAATAAAACAGATATCAAAATTTTTATCT CCAGCATTA

 ${\tt CAGAAATATAAAGTACTTAGGGGATGCGAGAATAGTTCAACATATGCGAATCAAAAAAACATGATTCACCACATAAACAGAACTAAGAACAAAAACCATTTGATTATCTCAGAGAAAAGCATTTGATAAAATTCAACATCATTTTGTGA$ 

AGAAAAGGAAATAAGTATCCGCAGATTGGAAATGAAAACATAAAATGGTTTGAAGATGACATGGTTGTC
TGTACAGAAAATCCAAAGGATTTGACAAATAAACTCCTGGAACAGATAAATGATTATAGTGAGGTTTTA
GGATATAAG

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 ${\tt TCCATTCTCCACTGTAATCAGAAAGATCTTTCTAAAATGTGAATAGGACCCAGTGATTCCTCTTGCCATTGCCTTCAGGATAAATTTCAAACTCTTTAGTGCAACATCCTTAATGACTTCACCCCAAATGCCCCTGCAGCATCACTT$ 

 $\tt CTCACACCAGTTAGAATGGCTATCATTAAAAAGTCAGGAAACAACAGGTGCTGGAGAGGATGTGGAGAAAGAGGAACACTTTTACACTGTTGGTGGGACTGTAAACTAGTTCAACCATTGTGGAAGTCAGTGTGGCGATTCCTCAGG$ 

 $\tt CTGCTCTGGTTAAAGTGGGGTGGGGGCATGGAACTTTATTCTGAAGCCTTCCTGCCCCATCCGTAGGCATCTTTGTGGAACTTTCCAGGGTGCCTCCAAATGTGAAAAACACTAATCGAAAAAACCGTCTTTACACCTACTATGTAC$ 

 $\label{thm:condition} TTGCCCTGGCACCCAGGCTGGAGTACAGTGGCATGATCATGGCTCAAACTCCTGGGCTCAAGCAATCCTCTTGCTTCAGGCTCCCAAGTAGCTACAGGTGTGTGCCACTTCGCCCAGTTAAACTCTTAAC$ 

AGACCAGCCTGGGCAACATGGTGAAACCCCATCTTTACAAAAAAATACAAAAATTAGCTGGGCATGGTGGCGTGTGCCTGTAGTCCCAGCTGCTCGGGAGGCTGAGGTGGGACGACTGCTTGAGCCCGGGAGGCGGAAACTGCAGTG

 $\label{thm:control} \textbf{GCATTTTCTAAAGTAACAGAAATAGCTCTAGCAAGCTTATGGTCATCAATAAGAATGATTATCATAAAAGTATTTAAAAGTCTTTTAATCCATTGTGTTTAATCTGGAACTGGTCCTCTAAATTGAAAATGAAATCATGAAGTAT$ 

 $\label{thm:control} {\tt GTGGATGCCATAGTAGATGCAAAAATACAATCATTTTTAAAATGGAAAGCATTTGTTATGTGGTAGT\\ {\tt GGAATATAAGAAATGCCATGCTTCCATATTTTTATGGTAATCTTGGACTCAGGTTCTACCCACCATACT\\ {\tt TAATTAGAA} \\$ 

 $\tt CTTTAGGTAAAGGGGTGGAAAAAGATACTCCATGCAAATGGATACCAAAAGTGAGCAGGAATAGCTATT\\ CTTATATCAGACCAAACAAACTTTAAAGCAACGGCAGTTGAAAAAGACAAAGAGGGACATTATATAATA\\ AAACTAGTC\\ \\$ 

 $\label{totalcond} \textbf{TGGGGCCTTCTAGCCCGTGATATAAAGGCTTGGTTTTAATAAGTTTTAATAATTCAGATGAAAGGCAGA\\ \textbf{TTAATAAAATAAGGCATTTAAAGTAGTATAATTCTGTGGCATTTAGTACATTCACAATGTTATGTAACT\\ \textbf{ACCACCTCA} \\$ 

 $\label{eq:ccc} \mbox{GCCCAAAGCGGAGGAGGGAACGCGCGCTATTAGATATCTCGCGGTGCTGGGGCCACTTCCCCTAGCACCGCCCCCGGGCTCCTCCCCGCGGAAGTGCTTGTCGAAATTCTCGATCGCTGATTGGTCCTTCTGCTTCAGGG$ 

 ${\tt TCATAGCTTAGCTCCCACTTATGAGTAAGAACATATGGTATTTGGTTTTCCATTCCTGAGTTACTTCACTTAGAATAGTAGTCTCCAGTTACAGCCAGGTTGCTGAGAGAAATGAGACAAGAAAAAGAAAATAAAGGCCAGCTTGCAAAATTT$ 

 $\label{thm:condition} TTTAGCTCCACGACCCTCAGGCTTAAACAGCAGTACTGGCCCCCCAGATCTCCAGCTCCCTGACCCTCAAACTCCAAACTGCAGCACCAGCTCCGCCCCGGGTCTCCAGCTCCACAATCCTCAAACTACAACAGCAGCACCAGCT$ 

 ${\tt CAGCTTTTTTTTTTTTTTTTTTTTTTTTTTTGAGACGGAGTCTCGCTCTGTCGCCCAGGCTGGAGGGCAGTGGCACGATCTCGGCTCACTGAAGCCTTCGGCTCACTGCAACCTCCGCCTCCTGGGTTCAAGTGATTCTCGTCGCCTCGGC$ 

 $\label{top:control} \textbf{GGTTGGAACAGTTTGGAAGGCTCAGTAGAACACTGGAAAATGTGGGAAACTTTGGAACCTCCTAGAGACTTGCTGAATGACTTTGACAAAAATGCTGATAGTGTTTTGAACAATAAGGTCCAGGCTGAGGTGCTCAGAGAGATGGAGAT$ 

 ${\tt TGATGGGCTTCCCTTTGTGGGTAAGCCAACCTTTCTCTCTGGCTGCCCTTAATATTTTTTCCTTCATTTCAAACCTTGGTGAATCTGACAATTATGTGTCTTGGGGTTGCTCTTCTCAAGGAGTATCTCTGTGGCATTCTCTGTATTTT$ 

TGAGCATTATACACTGCACCCAGTTTGTAGTCTTTTATCCCTTACCCACCTTCCCACCATTTCCCCCTGA
GTCCTCAAAGTCCATTGTGTTATTCTTATGCCTTTGCATCCTCATAGCTTAGCTCCCACATATGAGTGA
GAGCATACG

 ${\tt TCCCTATATAAAAGGCCAGCTTTAAATGTGGAGTTCACTTCAAGGATCACGACTCTATGCTGTGTTGTTGTAAATGCTTTTAAAATGGGCACATGGTACATTTTGTCTAGTTTTATAGTTGTTTACAGCAGAAGATTCAGTCTGAAAT$ 

 $\label{eq:condition} \textbf{ACTTAAATCTAAGACTGGAAAATTCTGGAAGATAACTTTGGAAAAACCCTTCTAGACATTGGCTTAGGCAAGGATTCATGACCAAGGACCCAAAAGCAAAATGCAACAAAAACAAAGATAAATAGTTGGGACTTAATTA$ 

 $AAGAAATGAACAAAGGCTCCAAGAAATATGGGACTATGTGAAAAGACCAAATCTATGTCTGATTGGTGT\\ ACCTGAAAGTGACGGGGGAGAATGGAACCAAGTTGGAAAACACTCTGCAGGATATTATCCAGGAGAACTT\\ CCCCAATCT\\$ 

 $AAATCAGTGTATTGAAGAGATATCTGCATTCCCATGTTTATTGCAGCACTATTCACAATAGCCAAGATT\\TGGAAACAACCCAAGTGTCCATAAACAGATGAATGGATAAAGAAAATGTGGTACATATACACAATAGAATACTATGCA$ 

 $\label{thm:condition} \textbf{GACCAACCAGGTCTCTACCACAAATACAAAAATTAGCTGGGGCATGGTGGCGTGTGCCTGTAATCCCAGCTACCTTGGGAGGGTGAGACAGGAGAACTGCTTGAACCCAGGAGACGGAGGTTGCAGCGAGGCCAAGATCGCACCACTGC$ 

 $\tt CTTAGCAAATCAAATTCATCACATTTGTCCCCCACCACCCCATCCACCTGCTCATGTCAGAGGTGATTGACCAGAGCAACTCCATCTGGAGTAGGGGCTGGGTACAATGAGGCTGAGACCTACTGTGCTGCATTCCCAGATGGTTA$ 

 $\label{eq:condition} \begin{tabular}{l} AGGACCTTCGTTGGTTGCCAGCAGTGGAAGTTCAAGCTCTTTCCTGCCCTGTTGTAGGGTGGAAAGACCCTCTTTGGAGAAGAGGAGGGGGAAGCAGTGCTGGCCCTCTCTGGAGAAGTCCCTAAGCCTCTAAGGGCCTGCTGTTGTCA\\ \begin{tabular}{l} CTGTTGTCA\\ \end{tabular}$ 

ATTCAACAGCTACAGAATACACATTCTTCTCATCAGCACATAGAATATTATCCAGAATAGACAGGCATA
AAACAAGCCTCAACAAATTTAAATACCTGACATCAAAATCATGTCCGGTATTTTCTCTAAGCACAATGA
AATAAAACT

 ${\tt TCTAGATCCTTGAGGAATCACCACACTGTCTTCCACAATGGTTGAACTAGTTTACAGTCCCACCAACGGTTGAAAAGTGTTCCTATTTCTCCACAGCCTCTCTAGCACCTGTTGTTTCCTGACTTTTTAATGATCGCCATTCTAACT$ 

 ${\tt CATGTGACACTTTCATCTCATCTCTTTAAACCTTTTACTATGGAAATTTTCAAACATATACAAAAATAGAGCTAGTCCCCAGTAACCAACTTCAACAAGTATCAACATTCTGCCATTTATCTTTCCATCTATCCCTCTCCTGACCT$ 

 $\label{thm:condition} \begin{tabular}{ll} GCAGAGGTGCAGTAAGAAATCCCCTTTACTACCCAGTGAAATACAGGGGCGTCTCCAAGGGAAGCCCGT\\ CTCACCTGCTTCCTGTCTCCCGCCGAGAACCTGCTCCAGCACAGCCTCCCAGTCTCTGCCCCAAAGGTG\\ AGGGTGGGC\\ \end{tabular}$ 

 $\label{thm:condition} \textbf{ATTCTGGTGCCTCAGTCTCCTAGTAGCTGGACTACAGGTGGACGCCACCATACCCAGCTAATTTTTGTAGTGAGGTGGGGTTTTGTCATGTTTCCCAGGCTGGTCTCGTACTCCTGAGCTCAAGCAATCCACCCTCCT$ 

 ${\tt TAAAGGGATGGAGAATCTACCAAGCAAATGGAAAACAAAAAAGGCAGAGGTTGCAATACTAGTCTCTGATAAAACAGACTTTAAACTAACAAAGATCAAAAGAGACAAAGAAGACCATTACATAATGGTAAAGGGATCAATTCC}$ 

 ${\tt AATCAGCTTGAATAGTTTTTAGATTCTTGACATATAACATAGTTAAGTGGATCCTCCAAACTGATATCT}\\ {\tt GATTTTTTAAACAGTTTTGCAAAAGATGTGGAATACACTGATTCCAACTAAATATAGCAGGTCCAATCT}\\ {\tt CTCAAAGAT}\\$ 

 $\label{thm:condition} TTTTAGTAGAGACAGGGTTTCACCATGTTGGCCAGGCTGGTCTTGAACTCCTGACCTCAAGTGATCCACCACCCAGCCAAAGTGCTGGGATTACAGACATAAGCCACTGCACCCAGCCAATTTGTTAATGTATTTAAAAGT$ 

 $\label{thm:caggactgcagactgcagactgcaggactgcagactgcaggactgcagactgcagactgcagactgcagactgcagactgcagactgcagactgcagactgcagactgcagactgcagactgcagactgcagactgcagactgcagactgcagactgcagactgcagac$ 

 $\label{total} TTCTCGGGCACACCCTCATTCAAGAAACTTTAAGATGGTGCTGATGGGGAGGTAGTGTGAGAATGAGTTACCATCGTTACCATTTCTTTGAAGCATTCCAAATTGCTAGCAAACTTGAAACAAATGCCCCTGGCTGAGTCTG$ 

 ${\tt CACGAAGGTCTGCAGCTTCACTCCTGAAGCCAGCAAGACCCACCAGATGGAAGAAACTTCAAACCGTCTGAACATCAGAAGGAACAAACTCCAGACCCACCATCTTTAAGAACTGTAATACTCACCACGAGGGTCCGCA}$ 

TAGCACAAGCTAGTGTTTACTTTCTGGACACACCACCCCAGCCATCCCATTGCATAATCAAAAAAAC
TAAGAGTATCCTGAATCATCTATTTCTCTGAACAACCTCATCTCCAATCTTTCCAGGAATATAGAAAGC
ATAATGAAG

 $\label{total} TTGCATTCCAGGTATGAAGCTTTATCATGGAGGATAAGCTTTTTGATGTCTGCTGGATTTGGTT\\ TGCCAGTATTTTATTGATGATTTTCACATCTACATTCATCAGGGATATTGGTCTAAAATTCTCTGTTTT\\ TTGTTGTGT$ 

 $\label{thm:condition} {\tt GCAAGATGCTTGAACAGATGCTTGAAGGCAGCATGCTCGTTAAGAGTCATCACCAATCCCTAATCCAAGTAATCAGGGACACAAACACTGCGGAAGGCCGCAGGGTCCTCTGCCTAGGAAAACCAGAGACCTTTGTTCAC}$ 

 $\tt CCGGCTAATTTTTGTATTTTTAGTAGAGACGGGGTTTCACCATGTTGGCCAGGCTGGTCTTGAACTCCTGACCTCAGGCTCAGGCTCCCAAAGTGTAGGATTACATGTGTGAGCACCGGGCCCGGCCTACTGAAT$ 

 $\label{totalam} TCATACTCCAGGGAAATTCAAAATCCTCCTGACATTTTCATTGATTACTAAAGGGATTATATTCTCAAAGGAAACTATGTCTCCAGGCTCCAACTTCTATTTGTTTCCAAATTTCATCCCAATATTGTGGCACGTCTCCTTTGTCTG$ 

 ${\tt GTTTGTGGTAGTACCATATGCAGTTTGGGGGAGTACTATGTGCAGTTTGGGGGAGTACCATGTGCAGTTTGGGGGAGTATTGTGTGCAGTTTGGGGGAGTACCATGTGCAGTTTGGGGGAGTACCATGTACAGTTTGGAGGAGTATT$ 

 ${\tt AATTAAGGTTCAGAAAATTAAAATTTCATATTGTTACAAAAGGACTAGATATTTCTCCCAAA} \\ {\tt AATGCTTTATTTCTCTCAAGAAGTAACATACATCCTAAAACATTTGGATATATTCAGACACTAAAGAT GTGATTGGA} \\$ 

 $\tt CTACTAAATAATTTTTTAAAAATTAGCTGGGTGTGGTAGTGTGCACCTGTAGTCCCAGCTACTTGGGAGGCTAAAGTGGGAGGATTGCTTGAGCCCAGAAATTCAAGGCTGCAGTGAGCTGTGTTGTACCATTCCACTTCAGCCTG$ 

 $\tt CCTCCTTTTCCTTCAGGGATTTTAAATGTTTTCTTTCCTCCATCTATTTAATTATATGTGATTGCCTTG\\ AGGATTTCAGCTTGAATTAAAATTACATATATTTACCTGTCTTTATTAATATTTAAACATATTAGAATA\\ ATACATGTT \\$ 

 $\label{eq:control} \textbf{ACCATATTGTTGTTGTTATCCCTTGCCACCCCCTATTCTTTCCCCCCAAGTCCCCAATGTCCATTGTATCCTTTATGCCTTTGCAACCTCATAGCTTAGCTCCCACATATCAGTGAGAACATACGATGTTTGGTTTTCCATTCC$ 

 ${\tt GAGACGGGGTTTCACCATGTTGGCCAGGCTGGTCTGGAACTCCTGACCTCAAGTGATCCACCGCCTCGGCCTCGGCCTCCTAAGTGCTGGGGATTATAGGTATGAGCCACCACAGCCGGTCTAGACATCTCTCTTTTCTCACCTCCCACACATA}$ 

 $\label{thm:condition} \textbf{TGGTCTCAAACTCTTGACCTCAAGTGATCTGCCCACCTCAGCCTCTCAAAGTGCTGGGATTACAGGTGTGAGCCACCGTGCCCCGCTAATTTTTGTATTTTAGTAGAGATGGGGTTTCGCCATGTTGGCCAGGCTGGTCTTGAACTC$ 

 $\label{eq:condition} \textbf{ACATTTTCTTCAGGGCTGATTTCTTTAAACCAGTCTCAGTGCAGTCCTGCACATTATATCTAATTGTC} \\ \textbf{CACCCCTTAATTTTTTTAATCTAGAATTACCCCCCCTTTTTAAATGGTACTGACTTGTTGAAGGAAAGA} \\ \textbf{GGCCAATTG} \\$ 

 $\label{eq:constraint} A CACCCAAAGGATTATAAATCATGCTGCTATAAAGACACATGCACACATATGTTTATTGCGGCACTATT\\ CACAATAGCAAAGACTTGGAACCAACCCAAATGTCCATCAATGATAGACTGGATTAAGAAAATGTGGTA\\ CATATACAC\\ \end{center}$ 

 ${\tt AACTCCTGACCTCAAGTGATCCGCCTGCCTCAGCCTCCCAAAGTGCTGAGATTACAGGCGTGAGCCACC} \\ {\tt ACTCTCAGCCAATGTTTGTATTTCTATTAGAGACAGGGTTTGTTATGTTGGCCAGGCTGGTCTCGAACACCCTGACCTT} \\ {\tt CCTGACCTT} \\ {\tt CCTGACC$ 

 ${\tt AAACATGAATTTCTGGTTTCTTGAAAGACATGTTTAGTCTGGCAACACTAGGCTTGCGTTCCTACGTGGTGGCATCACAGGGGGCTTAGGGGTGGCTGCTGTTAGTGACATCGCCAGGTGCCGTAGTCCCATGTCACTTGCT$ 

 ${\tt TCACCTTTTCCTATCACTTCAGTTGATTAAATATTATGTTCTGCTTTTTGATTATTTAGTCTATAAACA}$   ${\tt AAAAACATAAATACAGAAGTCAATGAATTTTTGTCTATTTATAAGTAACTATCCACGTCCATAGCTTCA}$   ${\tt GGAAGTTTT}$ 

 ${\tt ATATTAAGTACATTAATTTAATTACTCACCTAATTAAGTAATTAAATAATTTTGGTATATGAAGTCCATT\\ {\tt TAGCATATTAAGTACAGCGATATTAAGTATATTCATATTGCTGTGCAACCATTACCACCATCCACCTCC}\\ {\tt GGAAGTCCT}\\$ 

TCACTGCAGTTCACAGGAAGCCACATCCATAGGAAAAGGGGGAGAGTAATACATCAAGGGAACA CCCCGAGGGACAAAAGAATCTGAACAACAGTCTTCAGCCCTAGACTTTCCCAAATGAGAAGGAACCAGA AAACCAACC

AAAAGAAAATTACTATTATTATTATTGTAAGACACTACCATTAAGAGAAAATGAAGGCCAGGCACAGTGGCTCGTGCCTGTAATCCCAGCACTTTGGGAGGCCAAGGTGGGGTTTGAAGCTTGAAGCCAGGAGTTTGAGACCA

 ${\tt GAATAGTCGAGGAGAAATATATATAAGGGAACTGGTGCAGGGTTTGGCACAGAATATATACTTCGT}\\ {\tt CATTTTTTAAAACCGATGGTTATGAAGAGATAATACTTCCTTGAATATGTAAGTTCTAGTATGTAGTA}\\ {\tt TTTTTAAAA}\\$ 

 ${\tt GTCAGGTGTTCAAGACCAGCCTGGCCAACATGGTGAAATCCTGTCTCTACTAAAAATAGAAGAAAAATTAGCCGGGCATGGTGGCACACCTGTAATATCAGGTGCTTGGGAGGCTGAGACAGGAGAATCACTTGAACCCAGGAGGC$ 

 ${\tt TGGAGAAACCCCATCTCTACTAAAGATATAAAATTAGCCAGGCGTGGTGGTGCATGCCTGTAATCCCAGCTACTCGGGAGGCTGAGGCAGGAGAATCACTTGAACCCAGGAGGTGGTGAGCCGAGATTGCACCATTGCACCCAGCCC$ 

 $\tt CACCCGCCACCACATACGGCTAATTTTTGTATTTAGTAGAGACTGGGTTTCACTGTGTTGGTCAAGCTGGTCTCGAACTCCTGACCTCAGGTGATCCACCTGCCTCGGCCTCCCAAAGTGCTAAGATTATTGGTGTGAGCCACCGC$ 

 $\label{eq:condition} \textbf{AGCCTAGGATCTGCTATGTGTGAGATATGTGTCAGTGTCCCCAGACACCCCGGGCCAGATGCACACCCGGGCCAGATGCACACCCGGGCCAGATGCCCAGGGCTTTGAAAGCCCCTCCATTCATGCAGATGCCCCTCCTCTGAGCCGTGC$ 

GGGAGTTAGAGACCAGCCTGGCCAACATGGCAAAACCCCATCTCTACTAAAAATATAAAAAATTAGCCA GGTGTGGTGGCACACCCTGTAATTCCAGCTACTTGGGAGGCTAATGCATGAGAATCACTTAAACTTGG GAGGTGGAG

 $\label{total} {\tt TCTGATCACTCCTCAAGAATGGTCACATAGGCTGGGCACAGTGGCTCACGCCTGTAATCCAAGCACTTT}\\ {\tt GGGAGGCCAAGGAGGGGGGATCACGAGGTCAGGAGTTTGAGACCAGCCTGGCCAACAAAGTGAAACCCCGGTCTCTGCT}\\ {\tt GTCTCTGCT}\\ \\$ 

TTAGAGTAGAGTAGCATAGAGTTGGTAGCTTAGAGTAGAGTAGCATAGAGTAGCTTAGAGTAGAGTAGAGTAGAGTAGAGTAGAGTAGAGTAGAGTAGAGTAGAGTAGAGTAGAGTAGAGTAGAGAAATATAAATATTCCTGGTTTAACTAGAGGGTAAAAAATACACAGAATTTGGTGACTGATGA

 ${\tt CACTGGAGCCTGGGAGGTCAAGGCTACAGTGAGCTGTGATCATGCCACTGCACTCCAGCCTGGGCAACAGAGTGAGACCCTGCCTCAAAAAAAGCCTTTGCTTTGGTGGCCAGTGGCTTAAATGGGACTCAGCTGGAGG}\\$ 

 $AAGACTCACAAAACCGAGTGAAGCTGTTATACTCATAGTTTATTACAACAAAAAGATACAGATGAAAAT\\ CAGCAGCAGAAAAAGGTGCATAGGGCAGAGTCCAGGAGAGACAAAGCACAAGCTTCCAGTTTTCCTCTC\\ CCAGTGACA\\$ 

AACCCCATCTCTACTAAAAATATAAAAATTAGGCCGGGCACCAGGACTCACGTCTGTAATCCCAGCACT TTGGGAGGCCGAGGCAGGCGGATCATGAGGTCAGGAGATCCAGACCATCCTGGCTAACATGCTGAAACC CCGTCTCTA

 ${\tt CAAACAGAGGCCAAATCATAGTGAACTCCCATTCATAATTGCTAAAAAGAGAATAAAATACCTAGGAATACAACTTACAAGGGATGTGAAGGACCCCTTCAAGGAGAACTACAAACCACTGCTCAAGGAAATAAGAGAGACATAA}$ 

ATAACGTAGCATATAAAGGAGTGCCAATACAGCTGGCAGCAGATTTCTTAGTGGATCTTTACAGGCGAGGAAAAAGTGGCATGATATATTTAAAGTGCCGAAGGGGGAAAAAAACTTTTATACTAGAATAATGTTTCTAGTGAAAA

 ${\tt GATGGGGCCAACTGGCTCCTTTATTGTGCTTTGTTTTTCTCAACAGTGGCCCAATCCCAGCCCCCAGAATCTTGTCTCCCAAAGCTTAAAATCTCATCAAATAATAGGACATCTCCTTTCCTCTTTCTGCAGTCCCAGCCCCATAGCC$ 

 $\label{eq:GCTCATGCCTGTAATCCCAGCACTTTGGGAGGCCACAGCAGGTAGATCACCTGAGGTCAGGAGTTCAAGACCAGCCTGGCGAACATGGTGAAACCCCATCTCTACTAAAAGTACAAAAATTAACTGGGCGTGTTGGAGGTGCTTT$ 

 $\label{thm:condition} \begin{tabular}{ll} GGTTGAGCATGAGAATCGCTTGAACCTGGGAGGCCAGAGGTTGCAGTGAGATAAGGCAGAGCCACTGCACCTGCAGCCACCAGCAACAGAGTGAGACTCTGTCTAACTATGGGGCATGTTGGCTCATGCCTATAATCCCAGCACTCTGG\\ \begin{tabular}{ll} GCACTCTGG\\ \end{tabular}$ 

 $\label{thm:condition} \textbf{TGACATCGCAGGAAAATCCTAAGACATACCTACCAAAGCTAGGTAAGCTGAGGGGTTTAAGGAAGACAT\\ \textbf{GAAAAATGCCTCTGTTGATAAACAAGACAGATAATTCAAGCCAATTATTTTTCTTTGGAAATTGTCATA\\ \textbf{GCCCAGCTG} \\$ 

 ${\tt CATGCTTAGACTTGTTTTGTGGCCTAACATATGGTTTGTCCTATAGAATGTTTCATATGTTGATGAAAA}\\ {\tt GAAGGTATATTTTGCAGTTGTTGGATAGAATATTCTGTAAATGTCTGTTAAATCCACTTGATCTAAATTTCAGCTTGG}\\ {\tt TCAGCTTGG}\\$ 

 ${\tt CCTGAACATGCATGAGTTTGATCTGAAAAGTATTGATGCTTCTGATAAGATCAGGAGGATGTCTGCAAGTAACTTGCAGAGTGGGGGATCAGCAACCTGGAAGGACACCCCAGAGACTGCAGCTCGTAACCAGTAATATTGCATATAA}$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGCAAAAGGACCAAGGGACCAAGAGGAGAAAATGATTTGCCTTGTTCAAGAAACAAAAGCAGCCCTCTGTGGCTGAAGCAATACTTATTTAAGAGGAGAATGAAGTGGTCCACCATCTGTAAACATCGTCTAGATAGTCC\\ \begin{minipage}{0.5\textwidth} AGATAGTCC\\ \end{minipage}$ 

 ${\tt GATTTTTAAATATTTCTTTCAGAGTTTACCAAATAGATACAAACTAAGAAAGGATTAGAAGAATTGAATATCATAAAAATTTAAACTCTACAGAGACTGTGTATTCTTCTCTAATAGTCACCAAATACGTACAAAAAATTTGGTCA$ 

 ${\tt GAAAACTGTGAGCCTTTTATTTTTGTTTTTTTGAGACAGGGTCTCACTCTGTTGCCCAGACTAGACTGCAGTGGCGCCCATCACGGCTTACTGCAGCTTCAACCTTCTGGGCTCAAAGGATCTTCCCACCTTAGCCTCCCAAGTAGCT$ 

GGATAAACTAATTCTGAAACATTCATACAAAGGAATATTCTTCAGGAATAAAAAGAAATGAACTACCAA AGCATGAAAAGACATGGAGGAATCTTAAACATGTATTTCTAAGTGAAAGAAGCCAATACAAAAAGGCCA CATAGTATA  ${\tt TGTGTGTGTGTGTGCCAACGTTAGGCCAAGTGCAATGTCGGAGAGGTGGTGTTGGGTGTTTCCGCCACATGTTGTGGCATGGAGGGCCCCTGCTTCCCAGCGTCCTGTGAGGGGCCCCACATGATGTCTGAGCTGCCTTTCTT$ 

 $\label{eq:GGACAGCTGTATTCAATCTTCCATTGTAGCATAAAAGCAATGATAGATTATATCCCAGTGAATGGTAGT\\ GACTATGATCCAATACAACTTTATCAAAGGACACTGAAATTTGAATTTCTTGTCATTTTTTGTGTGTCAT\\ AAAACATCA\\$ 

 $\label{eq:condition} \textbf{AAGGGGCTGGCCGGGCTCTTCTGCACACATTTGTGTCAACAGTGAAAAATTACATCACTAGCAGACAAATCAAATACCCCAGTTGTGTCAAGATTTCCCAGATGTGATGTGCTGAGCTCGGAGCCCCTTGTAAATTCCACGCCGCTT$ 

 ${\tt AAACAAGCAATGGGGAAAGGATTCCCTATTTAATAAATGGTGCTGGGAAAACTGGCTAGCCATATGTAGAAAGCTGAAACTGGATCCCTTACCACCTTATACAAAAATCAATTCAAGATGGATTAAAAGATTTAAACGTTAGACC$ 

 $\label{total} \textbf{TGTAATCCCAGTATTCTAGGAAGCCGAGGCAGGTGGATCACTTGAGCTCAGGAGTTCAAGACCAGCCTGGCAACACATGGCAAAAACCCCATCTCTACAAAAAATACAAAAATCAGCCAGGTATAGTGGCTCATGCCTGTAGTCCCAGC$ 

 $\label{eq:contract} \textbf{ACTTATCACACATATCACAATAGCAAAGATATTCAGCATAAGTGTCCATTAACATATGAT\\ \textbf{TTAATAAAGAAAAGGTAGTATCTATACACAATGGAATACTATTCAGCTATAAAAAAAGAATGAAATAATC\\ \textbf{TCTTTTGTA} \\ \end{tabular}$ 

 ${\tt GTGGGTTGTTTATTCTTAGAAAAATCTAAGATTATTCCACTGTATTAGTGGCCTTGCCTAAATAGATGCATTGGGGGAGAAATCCTCCCACATAATGAATTTTGTCACTGAGACATTGCAAGAAGTAGCCCATAGCCTTTTCTTATCC$ 

 ${\tt AAATACTCTGCAGTGAAAGAAAATGAAAATGCAATATGCCAAAATTTATAAGATGCAGCTAAAGCAGTA}\\ {\tt CACAGTGGGGAATTTATAGCCGTAAAACCTATATTAAAGAAGAAGATTTCAAATCAATAGCCTAATCT}\\ {\tt TCTACCTTA}\\$ 

 ${\tt AATTTCTTTGGATCCACCTGATGGGGAAGGCTAGGCAGGTAACATAAACCCCTTGTAATTTTGTGGAAATTTTGTAGAAGGGAATTTTGGGGACAATAAGGCAGGTCATGTAATTTTCAGATAAATTTTGTTCGCATTGCACAATAAGC$ 

 $\label{thm:constraint} \textbf{TGTCTCTACTGAAAATTAGCCAGGTGTGGTGGCAGGCTCCTGTAGTCACAACTACTCAGGAGCTGAGGCAGGAGAATCACTTGAACCCAGGAGGCGAAGTTTGCAGTGAGCCGAGATCGAGCCACTGCAGCATGGGTG$ 

 ${\tt TCCACTCTGTATCTTGCATAAACAAGAACTGATTGAGTTGGAGAGTACTTTTCAATTACAATCCATTCC} \\ {\tt ATTTAAGAATTCTGAGCTGTCGGGCCTTCTTTTCTTTTAATGGAGCAAAGATAAGTCATATCCTTTCAC} \\ {\tt AGGAAGATG} \\$ 

 ${\tt CTTTCATGGAGTAAAAACAAAATTTCTTTTTAACTTTTATTTTAGGTTTGGGGGCACATGTGAAGGTTTGTTACATAGATAAACTCATGTCACAGGAGTTTGTTGTACAGATTGTTTCATCACTCAGGTATTAAGCCCAGTACCCA$ 

 ${\tt TCACTGATGGAACACTTAGGTAGAAAATCAGTAACATCTTGGCCAACATGGTGAAACCCCATCTCTATTAAATACAAAAAATTAGCCAGGTGTGGTGGTGGGCACCTGTGATCCCAGCTACTCGGGAGGCTGAGGCAGGGAATCGC}$ 

 $AAGAGGTTCGATTAGGCCAGTGTGAACACTGGAACTAACCTCTGTATCCCTCAAGAGGGGATCCTGATCA\\ ATAAATCACAGTTCAGCCACACGATCAAGTTCTCTGCAACAGAAAGCAGAAGAAACCCTTTCTGGACTG\\ ATACAGACT\\$ 

 ${\tt CAAGATTAAAAAAGGCTAAAATGGTAAAGTTTATGTATACTTTACAACAATTAAAAATAAACACATTCT}\\ {\tt TTTTTTTAAAGTGGCTACTGGGAAATTTAAGGCAGCAGTATTGATTAGGGAAGGAGACAAAGTCTGCT}\\ {\tt TATAATTTC}\\$ 

 $\label{eq:constraint} \textbf{ACAGGGGCCCACCCCGGCTAATTTTTGTATTCACGCTATACTTTTTACCTTTTCTACTTCT} \\ \textbf{TTCCCATATGATCTGTTGCTTAAAAAAAAATCCAATATATTTTAAAGCATAATATTTTACACGGGCAAAA} \\ \textbf{CAAGCACAC} \\$ 

 $\tt CGCATACCACCACCACTTGGCTAAGTTTTTTTGTGTTTTTTTGTAGAGACTAGGTTTCACTATGTTGCTTAGGCTGGTCTTGAACTCCTGGGCTTAAATGATCCACCTGCCTTGGCCTCCCAAAGTGCTGAGATTATAGACATAGGCCACT$ 

 ${\tt TCAGAGCTGTTTGCATTCATAATAATAGCTTTATCAAGAATCAGCTCCTTTTCTAGCATCAAAAGTTAAGATTTAGGCCAGGCGCAGTGGCTCACGCCTGTAATCCTAGCACTTTGGGAGACTGAGGCGGGCAGATCACTTGAGGT$ 

 $\label{thm:condition} \begin{tabular}{ll} GCTCTGACAGCTTCAGAGGACTGAATTAGGATGTTCTTGCAGATATCAGGAAAAGAAACAGGAATA\\ AAACACAATTATACTCAAACCTATAACTTTTGCCCGCCTTGAATACATTTAGTTGCTCACCCCCAAGGC\\ TGGAGGATA \end{tabular}$ 

 $\label{thm:constraint} TTCAGGGGTGTGTGGGCGGAGGGAAGGGAGTATGATGAAAAGTGGCCATTATCCTAAAGCTCATAGTGCAATGGAAGTTTAAAACCCTTGGACAGGTCACATGACCCTGAACTTGAGGGTGGCAGGACAGAGAGGCCAA$ 

 ${\tt CATGAACTATTCTTGAGAATGACCCATGTGCTAAGGAGAAGAATGTGTATTCTGCAGCTTTTGGATGAT} \\ {\tt ATGGTTTGTCACTATCTATTAAGTCCATTTAGTCTATACTGCAGATGAAGTTTGATGTTTGATTTT} \\ {\tt CTGTCTGGA} \\$ 

 $\label{thm:condition} {\tt GTTTAGAGAGGTCTCACTCTGTTACACAGGCTAGAGTTCAGCGGCACTATCGTAGCTTACTGCAGCCTCAAATTCCTGGGCTCAAGCAATCCTCCTGCCTCAGCCTCCCACGTGGCTAATTTTTAATTTTAATATTTTACAGA$ 

 ${\tt AAATTTAGGTTCAGAAAGGTTAAATTATTTTTAAATCTAATTTTGGCTTCAACACATTTTATACCCAA} \\ {\tt AAAGCCTAATCTGGCCCCTAGAAACACTAGAAGTGATAGGGCACTGGGGAAAGTTACAGTATTCCTTTC} \\ {\tt AGTCAACGT} \\$ 

 $\tt CTTACTGCTGTCTCGGCTCACTACAACCTCTGTTCCCCAGGTTCAAGCAATTCTCCTGCCTCAGCCTCCCAGGTAGCTGAGAATACAGCTGTGCACCACCACCACCCGGTTTCACCATGTTGGCCAGGGTGGTCTCAAACCTCTGACC$ 

 $\tt CTTTTTTGAGAAAGGGTCTTGCTCTGTCGCCCAGTCTGTAGTACAGTGGCACAATCACTGCTCACTGTAGCCTCAACCTCCTGGGCTCAGGTGATCCTCACACCTCAGCCTCCCAAGTAGCTGGGACTAGAGGTGCTGGCTAACTA$ 

 $\label{eq:contract} \textbf{ACTTTACTTTATTTAGTTTTGTTGAGCATCCGTTCTCTCAATCACTTATCCTTTGAGTTAC} \\ \textbf{AAACAATCCAATTACACTGTTATTTTAAAATGTACAAATAAGTTATTATTGACTATAGTCACCCAATTG} \\ \textbf{TACTATCAA} \\$ 

 $\tt CTGTGGTGGGTGCCTGTAATCCCAGCTACTTGGGAGGCTGAGGCAGAAGAATCAATTGAACCCAGGAGGCAGAGGTTGCAGTGAGCCGAGACTCCACTCCAGGCTGGGTAACAGAATGAGACTCCGCACCACTGCACTC$ 

 $\tt CTGGATATTCAACTCTCTTGTTCAAGATCTCCACTCAGCAGCATAATACGTTTTTCTAACTTAACAAACTTCACGCCAAACTCCCAAATCTGTTCCTCAATCTCAATCTCAGTAAATGGAAATCCACTCATTTA$ 

 $\label{total} TTTTGAGACAGAATCTCGCTACGTCTTCCAGGCTGGAGTACAATGGCATGATCTCAGCTCACTGCAACC\\ TCCACCTCCCAGATTCAAGCGATTCTCCTGCCTCAGCCTCCTGAGTAGCTGGGATTACAGCATGCACCA\\ CCACGCCGG\\$ 

 ${\tt ACATCAAGATTCCCCTGTAATTCCATTTGGAGTCTAAAGCTTAGATTTTGTTTTAAGCAGTGGCA}$$ AACATTATGTATAGATATAGATGTGGGATCATAAAATGTGTTTAAAAGTTATTGATGCAGGACAACTTTGCATATCAA$ 

 ${\tt TGCTAAATCTAGAGGTACAGATTAAATAAAGAGCAGAATACTTAGGCCAGATGCGGTGACTAACGCCTG}\\ {\tt TAATCCCAGCACTTTCAGAGGCCAAGGCGGGTGGATCACCTGAGGTCATGAGTTTGAGACCAGCCTGGCCAACAGGGT}\\ {\tt CAACAGGGT}\\$ 

 $AACAAGCATCTGGGCCGGGTGCGATGGCTCACACCTGTAATCCCAGCACTTTGGGAGGTCAAGGCAGGT\\GGATTACCTGAGGTCAGGAGTTCAAGACCGGCCTGGCCAACATGTACTGAAATACAAAAATACAAAAATA\\CTAAAAATA$ 

 $\label{total} \textbf{TTTCTCCCAGTCTGAAGTTTGTATTTTTATTGTCTTAATGGAGATTTTTAAAAAGGGAAGTTTTAAATT\\ \textbf{TGATGAAGTTCAGTTAGTATTTCTTTTTATGGGTTGTATTTTTTGATACAGGTCTAAGAACTCTTTGCT\\ \textbf{CAGTCTTAG} \\ \\ \textbf{CAGTCTTAG} \\ \\ \textbf{CAGTCTTAG} \\ \textbf{CAGTCTAG} \\$ 

 $\tt CCTCCTGGGCTCAAGCAATCTTCCCACCTCAGCCTCCTGAGTAGCTGGAACTATAGGCATGTGCCACCACCTGGCTTGGCTAATTTTGCATTTTTGTAGATGGGGTTTTGCCATGTTCGGGCACAAGTGATCCACCTGCCTCAGCCTCC$ 

 $\tt CTCTTATTTTAATAAGTCTTATTTTAATAATAAAATTGTAATTGCAAGCCACCTCTAAAGTCTATACAT\\ GTCTTATTAGTCATTTTATTTATTTTTTTTTAATGCTCAAGGGGTTGTTTTGATACAGACACGTGGG\\ ATACCAGAA$ 

 $\label{thm:condition} \begin{tabular}{l} GCCTAGTCAACATGGCGAAACCCCGTCTCTACTAAAAATACAAAAATTAGCTGGGTGTGGTAGCAGGCT\\ CCTGTAATCCCAGCTACTCAGGAAGATGAGGCAGGAGAATCGCTTGAACCCTGGAGGCAGAAGTTGTAG\\ TAAGCCAAG\\ \end{tabular}$ 

 $AGAGAAAAAGAGAGAGGGGAGAAAGAAAATAGATAAAACCACATAAATATCCAATACTTGATAA\\TTAGAGGGATAAATTATGCTAAAAATACACAATGGAATGCCATTCAATCATTAGAAATTATGTTACTAA\\AAAAACATG$ 

 $\label{eq:condition} \textbf{AGCTGTGGTAAGGAGGATTGAGGCTGGACATGAAGAAGTACTTCCAGGTCCCACAGTCTGGGACCATTTTCTTGCTGGGGCTTTAAAGTAGCTGTCCTTCTGTGAGCACAGTGTTGTCACCATCTTCCAGGGAAGGACTTGTCTTCC$ 

GGTCAAATTTGACAAACTTTTCCTTTAGAATTTCTTGTATTGTTTCTAAGCTTCAGAAGTCTTCTAACC CCTAGAGGTTTAATAAATATTCATTTTTATATTCTATTTGTGAAATTTAAATATATTTTAATTTTAATCC CTCAGAAGT

 ${\tt TTATAGGGAACATCTGAAATTCTCACCAATGCAGACCTGACTTGATCCTGGCTTGGAGTAGCCACGTTG} \\ {\tt TTGTTTTTTCCTCAGTGGAAGGGGAAAGAAAAGAACTTTATAATGGGTATCAGGGCCACCTGTGCCCATCTCCTGCC} \\ {\tt TCTCCTGCC} \\$ 

 $\label{total} TTGCATAGCAGTGGTATGTGGAGGCCCTTTTTCTCCATCTTGGGAGGTAACCATTCAGTATTTCTTC$  ATTAAATGTGATTAGCTGTCGGCCGGCCCTACGTAGTGCCCTTATCAGGGCGAAGATGTTCCCGTCTGT TCCCAGTTT

 ${\tt TATTCAAACCCCTTGCCCCTTTTTAAGATGCATTTTTGCTTTTATTCTTGAGGTTTAAGAGTTCTTTG} \\ {\tt TATATTCTAGATACAAGTTCATTATTAAAATATATAAAATGCAAATATTTTCTCCCATTCTGTGGACTGC} \\ {\tt CTTTTCACT} \\$ 

GAATGTAAATTGCTACAGCCATTATGGGAAACAGCATGAAAGCTCCTCAAAAAATTAAATATAGAACTA CCATGTAATCTAGCAATCCCACTCCTGGGTATATATCCAAAGAAAATTAAATCAGTATGTGAAAGAGAT ATCTGCATC

 $\label{eq:condition} \textbf{AGTTTAACTCATGTGTCTATGGACAGTAATATTTGAATAGCTATAATGACTATGTTTAAGTCTATTTTATTTCCAAATTCACGCATTTAGCCAGAAATTCTCTGACCAGGAGAATAGAGAGAATTGCCTAATGATTTCTCTTACCTATTTTACCTATTTTACCTATTTTACCTATTTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATTTACCTATACCTATACCTATACCTATACCTATACCTATACCTATACCTATACCTATACCTATACCTATACCTATACCTATACCTATACCTATACCATACCATACATACCATAC$ 

 $\label{thm:condition} \textbf{GGCTGTCAGGCCTGGGTGGCCCACCTGTAATCCCAGCGTTTTGGGAGGCCGAGGTGGGCGGATCACTTGAGGTCAACAGTTTGGCCAACATGGCAAAACCTCCTGTCTACTAAAAAATACAAAAATTTAGCCAGG$ 

 $\label{eq:gammatart} \textbf{GGTTATTCTAGTTATACATTCTTAAATTTTTTCAAAGTTTTCAACTTCTTTGCCTTTGGTTTGAAT GTCCTCCCGTAGCTCAGAGTAATTTGATCATCTGAAGCCTTCTTCTCTCAGCTCGAAAGTCATTCTG CATCCAGCT$ 

 $\tt CACCCATCTGTCTGCTAAGGAGTCCTCAGGGGGGATCCTGATGCCCTCTCAAATTTGAGATCCACTGGTT\\TAGATTATTTTTTATTATTTCTCCCCTCAAAGAGCTGCAATTTGATAATAGTGAAAAATGGGTCTATAT\\TAATGGTGT$ 

AAAAGTTTGTGTAATAAGTTAATGTTTTCTTTTTAATCAGTTTTAATTGAACTGAATTTGGTAAAATAA TTCAGAAATTTTTGCATAATTGCTTTATAAAACTCTTATTAATAAGATACATTTAGTTCTTAGTTTCTTG AAAATAATT

 ${\tt AAACCATTCACTCATTGAAGGACATCTCGGTTCTTTTGAGTTTTTAGCTATTTCAAATAAAGCTGCTATGAATATTCATGTACAAGTTTTTGCATGAATATAAATTCCCACTTTTCTGGGATCAATGTTCAAGAGCACAATTTCCCAC$ 

 $\tt CCTACACATCAAGCTCGAGGATTTGCCCCAGCCCAGGACTGACAAATTAGCTTTACTCAACATGCCCTGAGTCACAAAAACTAAAATACCTCTTAGTCTAAGTAGACACTTTCACTAGATAGGTAGAGGCCTTTCCTACAGGGTCTG$ 

 ${\tt AATTCTGAGAGAAAATACGTTTTCAATCTAGAACTCCTATACTAAGCCATATTATCAGTCAAGTATGAGGAATAAAATAAGTATATTTTTAGGCATGCAAGGATCAGAAATTTACCCCTCATCCCCACATAACTTTTCTTAGGAAAGC$ 

AAAATGATAAAGGGGCTATCACCACCAATCCCACAGAAATACAAACTACCATCAGAGAATACTATGAAC ACCTCTATGCAAATAAACTAGAAAATCTAGAGGAAAATGGATAAATTCCTGGACACATACACCCTCCCAA GACTAAACC

 ${\tt CCAGAGGTGTTTCACTACGATTTCAGTGGTCCCTGTCTTTGGTTTTAGCAGCGATGTGTCTTTTTGAGGC}\\ {\tt CCTAAACTACTTTCCTAAAATGAGGCTATTAGGGAGCACCAACCCTGGACCTCCCCCAGGGACTGTTGC}\\ {\tt AAGGATTAA}\\$ 

 $\tt CTGTGTAGATGTCTAGATATCTAGATATTTATCTAGATATCTAGATATCTGTCGCTATCTAGATATCTAT\\ CTAGATATCTGTCGCTATCTAGATATCTATCTAGATATCTGTCGCTATCTAGATATCTAGATAGT\\ ATCTGTCGC\\ \\$ 

 ${\tt TCATTCTGTCTCCTGGAACCCTGTGAAGAGGTGCCTTCCCCCTTATTGTAAGTTTCCTGAGGCCTCCCC} \\ {\tt AGTCATGCAGAACTGTGGGTCAATTAAACCTCTTTTCTTTGTAAATTGCCCAGTCTCAAGTATTTCTTC} \\ {\tt AAAGCAGCA} \\$ 

 ${\tt CAATATATGGCTATATTGAAACATGTTCACTTTCCTGATATGTAAAATAGACTATTATTATTATTATTATTATTATTATTATCAGATAGCATCAGCTCTAAAAAATATCTGAAATGGAAATCACAACTATTTACTTTATCAAAAAGCAT$ 

 $\label{thm:condition} \mbox{ATGGAGTTTCACTCTTGTTGCCCAGGCTGGAGTGCAATGGCGCGATCTCGGCTCACCGCAGCCTCCGCC} \mbox{TCCTGGGTTCAAGCAATTCCCCTGCCTCAGCCTGTAGCTGGGATTACAGGCGTGAGCCACCAGGCCCACCGGGCCCAGGCCAGGCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCCAGGCCAGGCCAGGCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCCAGGCA$ 

 $\label{thm:concord} \textbf{GCGATCCTTCCACCTCAGCCTGCCAAGTAGCTGAGATTACAGGCATGTGCCACCATACCCAACTAATTTTTGTTAGTTTGTTGAGATGGGGTGTCACTAGGTTGCCCAACCTGGGCTGGAGCTCCTGGGCACAAGTGATCTGTCCG$ 

 ${\tt TCCCTAATCCTACTCTTTGTTTACATCATTGTAAAAAGTTACACAGACATCTTCATATCAAGGTGAAAT TCTAAATAATACTGTTAATATAACCTAGATAGGTAGTTAACTGGAATTTGATGAAAACATTTAAGGCTT AATTTTTTA$ 

 $\label{thm:condition} \begin{tabular}{l} $\operatorname{GGTATTCATCGCTTAAAACCCCAAAATCGGCCGGGCGCAGTGGCTCACACCTGTAATCCCAGCACTTTG} \\ $\operatorname{GGAGGCCGAGGTGGGTGGATCACCTGAGGTTGGGAGCCTGAGCAAGCCTGACTAACATGGAGAAACCC} \\ $\operatorname{CGTCTCTCC}$ \end{tabular}$ 

 ${\tt CCAGAGAGCCCGTGCTGATAGAGCCACTGCTCAGCCCTGCACCCAGCATCCAGCGTGGGGCCTGGACCGTCATTGTGTCCTGGTAGATATTGGTCAAATATGGAATGAAAGAGCCTTGGAGTCAGACACAGGGCTGAACGAGT$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGACTGGGACAAATTAAAATTGCTAATGAAGTTTCAGGCACACATTGTCATTGATAACATCTTATCA\\ GGAGACAGGGTTTGAGAGCAGACAACCGGTCTGACGAAAATTTTATTAGGTGGGCATTTCCTCGTCCTA\\ ATAAGCCTG\\ \end{minipage}$ 

 $\label{eq:condition} \textbf{AGTGCTGGGATTACAGGCGTGAGCCACTGCACCCAGCCAATTTTTGCGTTTTTAATAGAGACAGGGTTTTGCTGTTGGCCAGGCTGGTGTCGAACTCCTGACCTCAAGTGATGGGATTACAGGTGTGAGCTACCGCACCTAGCCACC$ 

 $\tt CCACTGTACCTGGCCTATCCCCTTTTATATGTTATTAAATCAATTTGCAAATATTTCATTTAAGATTTT\\TATACTTATATTCATGAGGGAATATTGGCCAATAACTACCCTTTCTTATAAAGTCCTTTTAAAGTTTGG\\TATCAGCTT$ 

 ${\tt AAATTTTTTTTCCGTAAAGACGGGGTCTCACTACATTGCCCAGGCTGATTTTGAACTCCTGGGCTCAAGCGATCCTTCTGCCTCCAGCTCCCAAAGTGTTGGAATTATAGGTGTGAGCCACCACACCTGGCCTGATCTTATGATT$ 

 $\label{thm:condition} {\tt GGGGGATTGACAGGTGAAGCCCAGTCTGGGTCAGGTGGGGACTTGGAGAACTTTTATGTGTAGCTAAAGGATGGTAAATGCACCAATCAGCACTCTGTGTCTAGCTAAAGGTTTGTAAAGGCACCAATCAGCACTCTGTAA$ 

ATAAATAAACCCCCAAACGGCCTCTATGTGCTAAAGTGAAAGGAAGAGTTGCACGTCTCTCACTTTA
AATCAAAAGTGAGAAATGATTAAGCTTGGTGAGGGAGGCATGTCCAAAGCTAAGACAAGTTGAAAGCTA
GGTCAAAAG

 ${\tt AATAGGAACACTTTTACACTGTTGGTGGGACTGTAAACTAGTTCATCCATTGTGGAAGTCAGTGTGGCGATCCCAGGGATCTAGAACTGGAAATACCATTTGACCCAGCCATCCCATTACTGGGTATATACCCAAAGGACTATAA$ 

 $\label{eq:control} \textbf{ACCTTTCTCTGGCTGCCCTTAACATTTTGCCTTCATTTCAACTTTGGTGAATCTGACAATTATGTGTCTTGGAGTTGCTCTCTCGAGCAGTATCTTTGTGGCATTCTCTGTATTTCCTGAATCTGAATGTTGGCCTTGCCTTGC$ 

 $\label{eq:GAAGCTTTCGGAATCAGAAATCTGGCCCTTTCTTAAGGGAATTCCCTGTTGGTTTGGAGACCATGCTGGTTGTTAGAAAATTTAGATAAGGAACAATTTTATTTCTTTGCAGCACCAGTTCAACCATTATTTCTGAGTACCAATTG$ 

 ${\tt AAAGCACCATGAATAGAAGCGTATGGCCAAAGGCCAGGTGTGAGAAACGGTATCACAGCAGGTGCCAATAGAGAAGAGGTGAAGCTGCCATTTGGCTGACCAGGTAAATTGTTTACACTGATACCAAACAAGCTCTCCAATAAAGA$ 

 $\label{thm:condition} {\tt GTGGCTGATCGTGGCTCATTGACATGTCTGGGGGCCTTGGCTGGAACAACCGGGCTGATGTGACTCTAATTCATAGGATTTCTCATCCTCTGGGAGATAAAATGGGTATCCAATAAAATATTCTCCAACTATTAAAAAGAGTT$ 

 $\tt CGAGGTGGCCCTGGGGAAAGTAGGGTCAACTATGGACCCCGTAGGGGCAACAGGAATGTGGGGTCACAGGGGTGTGGGGTCACAGGGGTCACAGGGGTCACAGGGGTCACAGGGGTTCCGGAGATGGATTGGCGTGCTGGGGGTCACAGGACGTGCACC$ 

 $\tt CACGCCTATAATGCGAGCACTTTGGGAGGCCGAGGCAGGTGGAACTCTTGAGCTCATAAGTTTGAGACCAGCCTGGGCAACATGGTGAAACCCCATCTCTACAAAAAAAGACAAAAATTAGCTGGGCATGGTGGCGCGTGCTTGTAGT$ 

TAACAGGACTAAAAAGGAAATTTTCTAAAATTTATACACTAAGTATATTATTATTTTTCTAATGATCACT
TTGATAGAGCAAACTTAGAATCTATGGTTTCAACAAATGAAGAGGCTTATGCAAGAGAAAACCACCACC
TAACACAAG

GCTAGACTTGATACCAAAAATACAATCTATAAAGTTAAAAATTGATAAATTTTTACCTCTTTGAAATTAA
TAACTTTTGCTCTGCAAAAGACCTGTTAAGAGTATGAAAAGACAAACTAGAAACTAGAAAAAAATAATT
GCAAAACAA

 $\label{thm:condition} \textbf{ATTAGCCGAGCGTGACACATGCCCGTAATCCCAGCTATTTGGGAGGCTGAGACAGGAGAATTGCTT}\\ \textbf{GAACCCAGGAGGCGGAGGTTGCAGTGAGCAGAGATTGCGCCACTGCACTCCAGCCTGGGCGACAGAGCGAGACTCCAT}\\ \textbf{AGACTCCAT}\\ \\$ 

ATTACCCAAATGTCCAACAATGATAGACTGGATTAAGAAAATGTGGCACATATACACCATGGAATACTA
TGCAGCCATAAAAAAATGATGAGTTCATGTCCTTTGTAGGGACATGGATGAAATTGGAAACCATCATTCT
CAGTAAACT

 $\label{thm:constraint} TCCTGAGTGACCTACAAAGAGACTTAGACTCCCACACATTAATAATGGGAGACTTTAACACCCCACTGT\\ CAACATTAGACAGATCAACAAGACAGAAAGTCAACAAGGATACCCAGGAATTGAACTCAGCTCTGCACC\\ AAGTGGACC\\$ 

 $\label{thm:control} \textbf{GCCTGTAACCCCTTTTTTTGGCCAATTACTCCCATTTGGAACAGCTGTATTTACTCAATTACCTGTACCCGATTGTATCTAGGAAGAAGTAACTAGCTTGATTTGGATTTTACAGGGTCATAGGCAGAAGAGACTTGCCCTTGTCTCAG$ 

 $\label{eq:condition} \textbf{ACTCTGGCTTCCAGAGTTGCCACATTATTTCAATGTCCAGTTTTCAAAAAATATACGAGACATACAGT\\ \textbf{GAACTAAGAAAATATAGCCTATACCCAAGAAAATTTTAAAAACTCAATGATAACTGTTCCTGAGGAAGC\\ \textbf{CCAGATATA} \\ \\ \end{tabular}$ 

 $\label{eq:condition} \textbf{ACATGCTTTATTCACGTGTTTTCTGCCCTACTAGAGAGTGGTCCTTTCGGTCACTACATCCCCGGACCCGCCATGGACCCAACCCTGGGTCTTGGGTAAATGACCAGTCGAGTTGGTGTCCTCTGCCCAGG$ 

 ${\tt TTTGAAATGCAAACATCAGGCCAGGTGTGGTGGTTGCCCAGCCTGCGATCCCAGCATTTTGGGAGGCCGAGGCCGAGGCCGACCTGCGAACCTGGCGAAACCCTGAATCTACTAAAATACAA$ 

 $\label{thm:condition} \begin{tabular}{l} & \begin$ 

 ${\tt TACTTCCAACTATGTGGTCAATTTTGGAATAAGTGCAATGTGGTGCTGAGAAGAATGTATATTCTGTTGATTTTGGGGTGGAGAGAGTTCTGTAGATGTCTATTAGGGCTGCTTGGTGCAGAGCTGAGTTCAATTCTTGGATTCCTTGT$ 

 $\label{eq:control} \textbf{GGTACTGTTAAAAGCATTCCATTTTAAAATGGAAACAGCATAAAAATTCAGAAAATTTGCAGCCTGACA\\ \textbf{ATGTAGTAGAAAAGAAAAACCCATTTTTTGAGGAGAAATTCAAACCGGCTACAGAAATTTGCATAAGTA\\ \textbf{GCAAGGAGC}\\$ 

 ${\tt TATGGCTTGGCTGTTCCCCACTCAAATCTCATCTTGAATTGTAGCTCCTATAATTCCCACATCTCGTG}\\ {\tt GGAGGGACCTGGTGGGAGGTAATTGAATCATGGGGGCAGATCGTTCTCATGCTGTTCCCATGATAGTGAATAGTCTC}\\ {\tt ATAGTCTC}\\ {\tt CTCTCCCATGATAGTGAATCATGGGGGCAGATCGTTCTCATGCTGTTCCCATGATAGTGAATAGTCTC}\\ {\tt CTCTCCCATGATAGTGAATCATGGGGGGCAGATCGTTCTCATGCTGTTCCCATGATAGTGAATAGTCTCCCATGATAGTGAATAGTCTCCCATGATAGTGAATAGTCTCCCATGATAGTGAATAGTCTCCCATGATAGTGAATAGTCTCCCATGATAGTGAATAGTGAATAGTCTCCCATGATAGTGAATAGTGAATAGTCTCCCATGATAGTGAATAGTCTCCCATGATAGTGAATAGTCTCCCATGATAGTGAATAGTCTCCCATGATAGTGAATAGTGAATAGTCTCCCATGATAGTGAATAGTCTCCCATGATAGTGAATAGTGAATAGTCTCCCATGATAGTGAATAGTGAATAGTCTCCCATGATAGTGAATAGTGAATAGTCTCCCATGATAGTGAATAGTGAATAGTGAATAGTCTCCCATGATAGTGAATAGTGAATAGTGAATAGTCTCCCATGATAGTGAATAGAATAGTGAATAGTGAATAGTGAATAG$ 

 $\label{thm:condition} \textbf{TGGCCAACATGGTGAAACCCTGTCTCTACTAAAAATACAAAAATTAGCTGGGCATGGTGATGCATGTCTGTAATCCCAGCTACTCGGGAGGCTGAAGCAGGAGAATTACTTGAACCCAAGAGGCGGAGGTTGTAATGAACCCAACATC$ 

 $\tt CTCACATCTGTAATCCCAGCACTTTGGGAGTCGGAGGCAAGAGGATCACTTGAGGCCAGGAGTTCAAGACCCGGGCCAGGAGTTCAAGACCCGGGCCAAAAATCCCGTCTCTACAAAAATAGATTTTAAAAAATACTAGCCGAGTGTGGTAGGTGTGCGC$ 

 $\label{eq:control} \textbf{GCTTATTGGTCATTTGTATGTCTTTGGAGAAATCTCTATCCTTTGTTCATTTTTAAATATTGTTGAGTT\\ \textbf{TTAAGTTTTTATATATTTTTGGATACCAGTCCTTTATCAGATATATGATTTACAAATATTTTTCCCAT\\ \textbf{TTTTGGGTT} \\ \\$ 

 ${\tt TGGTGGATGGCTGTGCAAGAGGTGGCCATGGGTGGGTGTGGTGGCTCACACCTGTAATCCCAGCACTGTCGGAGGCCGAGGCCGGGTGGATCACCTGAGGTCGGGAGTTTGAGACCAGCCTGGCCAACATGGTGAAACCCCATCTC$ 

ATCCACCGCGCCACAGGAGCGAGGTCCAACGCAACGGTCCCTAGGGCCTCCAACCCAGCCTCAGT
TTCCTATCTGTCACATCGTTCTATGATCTCGAAATGACTATAACCCCTTTCTTAGCCCCAAACCAGCCG
GAAGCGACA

 ${\tt TACAGTTTGCTGAGGCTTTCAATTCTAAAAAAATACTATTATCAGAGATTTTAGACAATCATCTGATTTT}\\ {\tt TCTTTTTATTCAGCAGTACATTGCACTAATAGACTTTTAAATGTTTTTGGCAAATTTGAGCAGAAGGAGGAGGAGAACCTT}\\$ 

 ${\tt AAAGTCGTCCCTGGGCGGGGGAAGCTGGCTCTTTGCTTCCCCTCGGGCCCATGAGCCATTGTCCCCAACCAGCGAGGCGCATCTTAGAAGCACCATCTCCTCGGGCTCTTTTCCTGCTCTGCCTGGATTGGGCTCATTTACTAAAAA}$ 

 ${\tt GTAGAAAATGACAAAGCTATTTCTTACGATGCTCAATAAAGAGTAAAAAAGGTATTTAAACAAGAACTT}\\ {\tt GAATTCATTTGTGTTTTAAACCCTTGGTTTCATATGCTATAAATATTAAGACAAAATTTTTCATTATACTTATCATT}\\ {\tt TTTATCATT}\\$ 

 ${\tt GATATTTTCTCCAATGGATATTGAAGTGAATAAATAACTATTGATATAAAAATATACTTCCCATATTTACTTGATAAGTAAATTCATCAGGACCCCAAAATACCCATGACTTCACGAGCCAGAGGTTTGCTTCTATCCCATGTGACAG$ 

 ${\tt TAGATGTTGGGTGTTCTGTGAAGATCAGGTCATGGTGGTTGATAGTGTTGTTCAGAACATCGATGTTTT}\\ {\tt TCCTGATTTTTGGTCTGTTCTGTCGATTTCTGAGAAAGTATTAAAATTAAAGTTGGGTCTTGCATTTTT}\\ {\tt ATCCATTCT}\\$ 

 $\label{eq:constraint} \textbf{AGCAGACTTCCTTCTTGCCTGGAGACTAGATTTGCCTTTGTAGGACTAATATTAGCCACAAGATTAGAAA \\ \textbf{TTATGGTTTAGGAGTCATGCAGCTGGAGGCTCAAGATTCTGAACTCTTGAGATCAATGCTTGAGATATT \\ \textbf{TTGCAGACC} \\$ 

 ${\tt TATTCTATTATGGATAATAACTATGATATAGTTTGCTGTTTTTAATAACAGATAATTAAATAGATATA}\\ {\tt TAAATTAATCTTTTGGAAATTCAAAGGAAAATGTTTGGGATATGTACACACATATGACTCTCAACTACA}\\ {\tt TAGTAAATA}\\$ 

 ${\tt CCCAAAGATACGTAATAATCACCTCGAGAAATAGACAAAAGAATAGATTCCAAAATCCCATATTACAAAATCCCATTCTGAAAAAACCCTGAATTTAGTACATTTAAAAAAGGAAACCAAGAATCTGCCTTTTTAAAAACAAGCTCCTTG$ 

 $\label{eq:totalcocc} \textbf{ATCCACCCGTGGTGCCAAACCCATATACTCTCCTATCCTCAATACCTGCCTCTACAACCCATTATTCT} \\ \textbf{GTTCTAGATCTCAAACATGCTTTCTTTACTATTCCTTTGCACCCTTAATCCCAGCCTCTCTTCGCTTTC} \\ \textbf{ACTTGGACT} \\ \\ \textbf{ACTTGGACT} \\ \\ \textbf{ACTTGGACT} \\ \\ \textbf{ACTTGGACT} \\ \textbf{ACTTGG$ 

 ${\tt GGACATATCTCAAAATAAGAGCTATCTGTGACAAACCCACAGCCAATATCATACTGAATGGGCAAAACTGGGAAGCATTCCCTTTGAAAACTGGCACAAGACAGGGATGCCCTCTCTCACCACTCCTATTCAACATAGTGTTGG$ 

 ${\tt GAACACCTTTGTCAGAAAGATTGCTTTCCAGAATTTTAAGGCCAGGCATGGTGACTCATGCCTACAATCCCAATACTTTAGGAGGCTGAGGCAGGAGGATTGCTTGAGCCCAGGAGTTTGAGACCAGCCTGGGCAACATAGGGAGACCCAGGAGACCAGCCTGGGCAACATAGGGAGACCAGCCTGGGCAACATAGGGAGACCAGCCTGGGCAACATAGGGAGACCAGCCTGGGCAACATAGGGAGACCAGCCTGGGCAACATAGGGAGACCAGCCTGGGCAACATAGGGAGACCAGCCTGGGCAACATAGGGAGACCAGCCTGGGCAACATAGGGAGACCAGCCTGGGCAACATAGGGAGACCAGCCTGGGCAACATGCTTGAGGCAGACCAGCCTGGGCAACATAGGGAGACCAGCCTGGGCAACATTTTAAGGCCAGGCATGGTGACTCATGCTTAGAGCCCAGGAGTTTGAGACCAGCCTGGGCAACATAGGGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGAGACATAGCTGAGACCAGCCTGGGCAACATAGCTGAGACCAGCCTGGGAGACATAGCTGAGACATAGCTGAGACCAGCCTGGGAGACATAGCTGAGACATAGCTGAGACATAGCTGAGACATAGCTGAGACATAGCTGAGACATAGCTGAGACATAGCTGAGACATAGCTGAGACATAGCAGAACATAGCTGAGACATAGAATAGCAGAACATAGCAGAACATAGAGAACATAGAACATAGAATAGAACATAGAATAGAACATAGAATAG$ 

 $\label{total} TTCTATGACATAACTATCGTGCCTGTGTACAGCACTCTCTACAATGAGAAACTGATACTCACTGGAATT\\ CCAAGTTGTTCAACATCTAAATCCATCAACTTCATTCATAGTCTGAAACTTTCTCCTGGTCTACCAAA\\ AGAAAGCAG\\$ 

 $\label{total} {\tt TCCCAGCAGGTATTTCTCCAGAGGGAGCAGCTGTGGGCAGCTGTGGGCATCAGCACTCAGCCCCCGGGGTGGGGTGCACAGCCTGAAAGAGGGGTTCTGGGTGGAACTCGTGGTCATCCAGTCACAGTATCTTTGCCTGAGGATGG$ 

 ${\tt AAAATTGGACAGCCATATGCAGAAGAATGAAACTAGACCCCAAGCCTCTCACCATATACAAAAATTAGCT}\\ {\tt TAACATGGGTTAAAGACATCAACATAAGAGACAAAACTATTAAAAAAATCCTACAAGAAAACTTAGGAACATCTTTTGG}\\ {\tt ATCTTTTGG}$ 

 $\label{eq:totalcond} \textbf{ATTAGTCTTGCTAGCGGTCTATTTTGTTGATCCTTCAAAAAACCAGCTCCTGGATTCATTAATT\\ \textbf{TTTTGAAGGCTTTTTTGTGTCTCTATTTCCTTCAGTTCTGCCCTGATTTTAGTTATTTCTTGCCTTCTG\\ \textbf{CTAGCTTTT} \\ \end{matrix}$ 

 ${\tt ATGTAATATGCTGAGGTGGCGACCTCAGTGGAGAATGTAAAGACTGAATTGAATTTAAGCTAATGTG} \\ {\tt AAATCAGAGAATGTTGTAATAAGTAAATGCCTTAAGAGTATTTAAAATATGCTTCCACATTTCAAAATATAAATGTA} \\ {\tt TAAAATGTA} \\$ 

 $\label{totalaca} \textbf{TGGCTCGAAACAACAGAAATTTATTGTCTCACAGTTCTGGAGTCCAGAAGTCTGAAATCAAGGTGTTGGCAGGGCTGTGCTCCCTCTGACGGTGGTAGGGAAGGAGCTGTTCCAGGCCTCCCGGCTTCTGGAAGCCTCAAGCATGCC$ 

 $\label{thm:control} \textbf{ATTGTGACATTGCATAAAGGGCAGACCTGGCATAGGGCAGAGCTCACAATTTAGCTTTGATAATTGCTGTCTTGTCATTGCGGTAAATGAGGAAACAGGCATGAAAGGTTACGTGCTCAGCCACAGCCACAGAGCTAGTCAGTAGC$ 

 $\tt CTGATTGCCCTGGCCAGAACTTCCAATACTATGTTGAATAGGAGTGGTGAGAGAGGGTATCTTTGTCTT\\ GTGCTGGTTTTCAAAGGGAATGTTTTCAGCTTTTGCCCATTCAGTATGATATTGGCTGTGAGTTTGTCA\\ TAAATAGCT$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGTGTGAGCCCCGCCCAGCCTGTTTTGTATTTTAAGAGACGGAGTCTTGCTATGTTGCCC\\ AGGCTGGTCTCAAACTCCTAGGTTCAAGCAGTCCTCCCACATTGGCTTCCCAAAGTGCTGGGATTAGAGGTATGAGCC\\ \end{minipage}$ 

 ${\tt GATTTCTAGCAAGACTGGGGAAATTTTTCTTGATCTTTCCCTCAAATAAGTTTTCCAAACTTTTAGATTTCTTCTTCTTCCTCAGGAATACCACTTATTCTTATGTTTGGTTGTTTAACATAATCCCAAATTTCCTGGAGGCTCTGTT}$ 

 $AATAAAAAGAAACATTTTAAATATAGAGCAATTTTTTAAATGGCCGTTATCATAGGAACTTAGAATCAA\\ ATACAGTAATTCAAGGTAGCCTTTTTCTAATTATTTTATATTTATGGCCAATTTTAAAAGTTTTGAACT\\ CCTGCCAGA\\$ 

 ${\tt GAAGAGAGTTGGGGGCAATTCTTTGGAGGTGGAAAGGGAAAGGGAAGTTCTGAGTATCCTTTTTACAT\\ {\tt TGTTCTATTTCATGCTGTAGGGCTTAAGTGTGTGGCTAGGGGGAACATGGGGTATTGATTCAGGATTAT\\ {\tt ATGGGGGGAG\\ }$ 

 $\tt CTACCACCATTGTAATCAAGATATAAAATGGTTCTACATCCCCCCAAATTTTTCATGGCACCCTTTTTTTATTCCCTCTCCCCATCCACCCCTGGCAATAGTGAATCTGCTTTCTGTTCCTGTAGTTTCATCTTCTGGAGATGTCA$ 

AAAAATACAAACAAAAATCAGAGACTATTACAAACACCACTATGCACAAAACTAGAAAAACCTACACAA
AATTGATAACCTCTTGGAATCATACAAACTCCCAAGATTAAACCAGGATGAAATTGAACAGACCAATAA
CAAGTACCA

 $\label{eq:ggtagataccca} \textbf{GGGTAGATACCCAGCAGTGGAATTTCTGGATCAAATGGTAGTTCTACTTTTAGTTCTTTAAGGAATCTCCACCAGCAATGTTTCCATAGTGGCTGTTCACCAGCTGTTCACCAGCAATGTAGAAGTGTTCCCTGTTCACCAGCATCTA$ 

 $\tt CTTGGCTCATAGCATACCTTGGCTCCTATTTCATCCTTGTCTGTGCCTGGGCCTCTGTGTAAATGTATT\\TGAATAATATGGTAATCACTTGTGAACTTACAACACAAACCAAAGAACCAGGGTTCTGACCCTAACATCT\\GCTCCTCCT\\$ 

 ${\tt TACCTAAGAACAAGATAATATAAGTCTTCTTCTTCTTCTGCTTCAACTATTCAGATCTTTATAAACTGTTA}\\ {\tt TATTATCTGGGAGATCTTTCCACCCTGCAGAGACTAACCCAACAACTTACCTCCTGTTTTCCATTAACCCCAACTGCTG}\\ {\tt CAACTGCTG}\\$ 

 $\label{thm:control} \textbf{GCTCTGCACACTCACAGAAGTGGGAATAACTTGCAGTGCAACCATATAATGGAATTCTCTCATTTTGTA\\ \textbf{TTTTTTAATTTTTTTTTTTTTTGAGACTGGGTCCCACTCTGTCACGCAGGCTGGAGTACAGTGGTGTG\\ \textbf{ATCTTGGCT}$ 

ACAATATTAACCTTAAGTATAAACGGGCTAAATGCCCCAATTAAAAGACACAGACTGGCAAATTAGATA GAGTCAAGACCCATTGGTGTGTGTTATTCAGGAGACCCATCTCACATGCAAAGACAAAAGGCTCAAA ATAAAGGGA

 ${\tt GATTTGGCCAGCAAAATTTGTTAAGGGACCAGAGAGTAAATATTTTTAGCTTTGCTAGCCATACAGCTTCTTTGGCAACTACTCAGCTCTGATGCAATGTGAAGCAGCCATAGATAATATATAAACAAGGGAGTGGGACTGTGTTCC}$ 

 $\label{thm:condition} \textbf{TGGTGATCTGCCGGCTAAACGTGTTCAGAGACGGGGACGCTGGGGCCATCCTCTGCTCCACTCCTGGTGAAGAGCCCTCAGACCCATAAGATGGGCTTGTCCATATCACCTTCTCAGGTGAGCCCTCA$ 

 ${\tt AATTTTGGGGTTATAATGCTATATATTTTGCTTTAAGAACTATAATAGCTACATTCTCACATTCTG}\\ {\tt TTTTATAATTTTTCCATGGTTATTTATATTTTATATTTTATATGTAAATTGTCTCAATGCACACCCCCATACAGCACCTT}\\ {\tt CAAGCACTT}\\ {\tt CAAGCACTT}\\ {\tt CAAGCACTT}\\ {\tt CAAGCACTT}\\ {\tt CAAGCACCTC}\\ {\tt$ 

 $\label{eq:condition} \textbf{AGATGCGTGGCTCATGCCTGCAATCCCAGCACTTTGGGAGGCTGAGGTAGGCAGATCACGAGGTCAGGATTTCGAGACCAGCCTGACCAACATAGTGAAACCCCGTCTCCACCAGAAATACAAAAATTAGCTGGACATGGTGGCGC$ 

 ${\tt ATATATAAAATGAGATGGGGTCTCACTATGTTGGCCTTGCTGGTCTGGAACTCTTGGGTTCAAGCAATCCTCCCTGCTCTCACCTCCCAAAGTGCTGGGGTTACAGGCATGAGCCACCCCGCTTGGGATGCCTTTTTTATTCTAAG$ 

 ${\tt CTGAGCCTGTGGTCACTGCCCTTTTCTCCACAGCATGGCAGTCACCATCCTGGGCTGGGGTACAGAGGGGGCTTTGCAGAGATCAGCATAACAAAAGCATCACTGAGATGCTGCAATAGGAAACCGTGATACCTTCGTGGGC}$ 

 ${\tt CACTGGCCAAGCCATACCCCAGACCATTTTCCTGGACTCTGTAGAGGTGGCCCCAGGCACCCAGATTGTGCAGAGCTCCCCAGGTTGTTCTGTGCAGCAAAAGTTGAGAATGCTCATTTAGCAATGAAATAACCAAAGTTTTTA$ 

 $\label{eq:concorrection} \textbf{ACTACAGGCACCACCACCACGACTAATTTTTGTATTTTAGTAAAGACGAGTTTTCACCATGTT}\\ \textbf{GGTCAGGCTGGTCTTGAACTCCTGACCTCAAGTGAGCCACCTGCCTCGGCCTTCCAAATTGCTAGGATT}\\ \textbf{GTAGGCATG}\\ \\ \textbf{GTA$ 

 $\tt CGCCACACTTCAATCTCTCCCTTAATTTCAATTCCTTTCATTTCGGGGAGAGACAAGGAGACACGTT\\TTATCCGTGGACCCAAAACTCCAGCGCCGGTCACGGACTGGGAAGGCAGCCTTCCCTTGGTGTTTAATC\\ATGGCAGGG\\$ 

GGCACCTGTAATCCCAGCTATTCAGGAGGCTGAGGCAGGAGAATCACTTGAACCTGGGAGGCGGAGGTT GCAGTGAGCCAAGATCACACCACTGCACTCAAGCCTAGGCGACAGAGCGGGACTCTGTCTCGAAATAAA TTAAATTAA

 ${\tt TCATGTTTTCCTCAGGTTCTCCCAAGCTCAGTTTGAAATAATGAAAGGAGCTAAGCATGGTGGCTCACCTGTAATCTCAGGATTTTGAGAGGTTGAGGTGGACGGATCACCTGCGGTCAGGAGCTAAGACCAGCCTGGCCCAA}$ 

 $\label{eq:contact} \textbf{AGTTCATTATTTGTAAAACCACAAAATTCAATATGTCTTGTGTCAGCATATTTTTCAAAGCCACTATTTTTCAAAGCCACTATTTTACTTCTCCCCCAAAACGTTTTTAAATTAAACAGAGAACTCTCAAAGCACCTGAGAATTACTTCAGT$ 

 ${\tt TCAAAGACACAAGACGACATCTTTCAGCAATCACATGTAAATCTATTATTCTGTTCTTTTAGTTTGTT}\\ {\tt GAGAGGCTCCACTCCCAGAGAAACTTGGTCAATTAAAAAACATCAAGGAATAAACCACTTTTTCTACAAAAAAACATCAAGGAATAAAGTC}\\ {\tt AATAAAGTC}\\$ 

 $\label{thm:condition} \textbf{GTCACCCAGGCTGCAGTGCAGTGCAGCTCCAGGTTCAAGTGATCTCCCCAGCTTCCCAGCTCCCAGGTTCAAGTGACTCCCAGCCTCCCGAGTAGCTGGGACTACAAGTGTGCACCATTACACCTGGCTAGTGTTTGTAGT$ 

 ${\tt GATTTCTGCTGGATTTCTTTTACTAGACAACTGAAAGTTAACTCTTCATTATCTCTATGAACATCTAT}\\ {\tt TACAGCTAGATGACAGGTGTCAATCACAGCTATATAACTGGCCCTCGGAATGTCTTCTGAAAATTGAAAATTGAAAATTGATTATT}\\$ 

 $\label{eq:gcgtccaacattgtaacttcatttgaaacttgaaaattaaaattgaattaacaacagaagcagtaaaagaagtaatttcagctttcacttaacttcagattgactcttaatttggctgtggtttttaacgcctcggtttacaa$ 

 ${\tt GTTAGATGTGAAGTTTTTTGGTCAGTTATAAGCATATTATGTGATTTAGTTTTTGTTTAAGCTTTAAATATGAAAACTTCTAGAATCATAATCTTAGCTGTCATCTTCTGAACTCTAGAATTTATCTCCCTAGATGCAAATCTTAGC$ 

 $\tt CTAAGAAAAATTCTTCTGCCTTGGGATGCTGTTAATCTATAACCTTACCCCCAACCCCGTGCTCTCTGAAACATGTGCTGTGTCAACTCAGGGTTAAATGGATTAAGGGCGGTGCAAGATGTGCTTTGTTAAACAGATGCTTTGAAGGGCGTTGAAGGG$ 

 $\label{totactttgcccag} \textbf{TCTCGCTACTTTGCCCAGGCTGTCTCAAACTCTTGGCCTCAAGTGCTCCTCCTGCCTCAAGGCTCCACTCCAGGCAGCCATCAGGCATGAGCCATCAGGCTGGCCTACTTGCCTCAGGCAGCCGACTGACAGCCATCCACTCACTCCACTCCACTCAC$ 

 $\tt CTGACTTCAGGATATCCTCCCGCCTCGGCCTCCCAAAGTGCGGGGATTATAGACAAGAGCCACTGCGCCTGGCCCATTTTTCTTTTTTTAAGCTATATAAATATTTGATCCACCTGAAATTTTGCCAGGTATATAGTGAGAACTAT$ 

ATACACACTCTTTTCCTCAGCACATAGATCATTCTCAAGGATAGAACATATGTTAGGTCACAAAACAAG TCTTAAAAAATTCAGAGAAAAATTATATCAAGTACCTTCTCTGACCATAATGAGATAAAACTACA CATAAAAAG

 ${\tt CTAAAATTCTTGTTTCAAATGAGCACACATCACTGTGTCTCATATCTTGTATTTTGTTTTAGTGCTTTTTTCCATTTCAAAGGATTTTTATATATGTAATCTCATGTTATCCTATAACTTGGTGTAGGAGAGCTAGGGAAGGTGAGGT$ 

 ${\tt GTAAATGGGGAAGAAATAAGTCTTTGCTTACAGAAAAAAAGGGCACAAAAATGTAGTTGGTTCATTT}\\ {\tt TGTGGCGAAGATGAGCCATACGCTCCTATCTGCTGGTGGGAGGGCAGCTGGCTCACACTCTCCAGAGGACACTGTGGT}\\ {\tt CACTGTGGT}\\$ 

 $\tt CTGATTATTCAAATCAAGGACTCCTCCCTGCCCCCAAAGTACACTTAATTGGTTTGTTACTTTTTTAGGCTGGTAAAACTTAACATTTTTCAATAAATTGTTATTTAAAATGCAACAATTATACTAGGACAGATGTTGCTTTAAAT$ 

 $\label{total} TGAAATGAAGGTAGGAACAAGGAAGCTATATAGGGCTTTGCAAACCCTGGTAGGGCTTTTGTGTCTTGTTTTGGAGTGCAATATGAGGTTTCTGGAGGGTTTTGAGAAGAGGTATGATCTAGTACTTTTGGCATTTTCAAAGGCTCATT$ 

 $AAAAACACTGATAGCAAACAGGGATTCCAAATTTATTCTTTGGCTTAAAAAATTTCAATATTGCTGTCA\\ TCAGGATTTCTCATTTTGAGCTCAGTTCATAATGATTCTAGGTTTGATCATATTTTAAACTTGTATCAC\\ TCTAAAATG$ 

 ${\tt GGGACCCTGAAATGTGGAAGGAGACATTTGGGTCAAACCACTCAAAGATTGTCAGTTGACTTCAGAGTT} \\ {\tt ACTGGGGACAATTGCAGTGGCATCGCTACTTGTCGCTATAAATATCCTCCCCAAGCCAAAAGAAGAAACAGAAAAGGA} \\ {\tt AGAAAAGGA} \\$ 

 $\label{totalactic} \textbf{TCTCAAACTTTGCTTCACACTAGAATTACCTGGGGAGCTTCTAAAATCCCAATGACAAAATCAGCTGGGTGGTGGCACATGCCTATAGTCCCAGCAACTTGGCAGGCTGAATTGCAGAGGATCTCATGAGCTCGAGGCTGCAGTG$ 

AAAAACAAAACAAAACACAAAAAACCAGATCATCAGATGGACAAAACAGACTCTTTGTGCAATAAGATA CCAAATTCCAACCTGACCCTGTATGTGATGTAGAGCATAACAGTGACAGATAACAGGCCCTAAGGAAAG TCAAAGTAT

 ${\tt ATTGATTCCATGTCTTTGCGAATAGTGCTGCAGTAAACATACGTGTGAATGTATCTTTATAAT} \\ {\tt AGAATGATTTATATTCCTTTGGGTATATACCCAATAATGGGATTGCTGGGTCAAATGGTATTTCCTGTT} \\ {\tt CTAGATCTT} \\$ 

 $\label{eq:gagacta} \textbf{GGTGGGAGATTGCTTGAGCCCAGGAGTTTGAGACAAGCCTGGACAACACAGTGAGATCCAATCTTTAAAAAAATTTAACCAGGCATGGCGATATATGCCAGTGGTCCCACCTACATGGGAGGCTGAGGCAGGAAG\\$ 

 $\label{eq:condition} \textbf{ACCTCACTTTAAAACTGCCTTAAGTATAAATAGTACCTTTGGAATGTATTTAGTTCATCATTTGAGCAGCCTTCATACTGGTTTCCTCAGCCTGTAATATTTTCAGCCCACTGTTTACCTTGTCTCAAAAAAGC$ 

 $\tt CTGGCTAATTTTTTTTTTTTTTTTTTTTTTTTTAGAGACAGGGTTTCACTATGTTGCCCAGGCTGATCTCAAACTCCTGGGCTCGAGCAATCCTCCACCTCATCCTCCTAAAGTGCTGGGATTATAGGTTTGAGCCACTGCGCCCCAGCCTTT$ 

 $\label{eq:condition} \begin{tabular}{ll} A CAGGGTGGTGTGGGCTGTGTAAGGGGCGTGCAGCCATGCGTATCTGACCTGCCCTAGGTCCCAGGCCCTAGGCCCCAAGAGCGACCTTGGAAGCTCCAGGCCTTCACAGCCCTCTG\\ \end{tabular}$ 

 $\label{thm:condition} \textbf{TGTAAGTGGCTTGTTAAAGTGCACATCATTTTCCTGATCAGCGGTAGCGAGGCTGCATCTTTAGGAGCTGATGTGATTTATCATGTTATTATATTTTAGAGACATTTTGAAAATGCTGCTATTTACTCAACCGACTGTGTATATGG$ 

 $A GAGCAGATAGTGAATTCTTGGAAATCCATAGGAAACAAAATGACTATTTATAGAACCAAATAAAAGCC\\TTCCGTTAGAAACTAAAAAAAATCAATGGTGTTTTATGTGTTTTATATAAGCAAAATGCAAAGGAGAAAA\\AACAGCAAA$ 

ACTGAGTGAACCAGACTCCGTCTGCAATCCCGGCACCTCGGGAGGCCGAGGCTGGCGGATCACTCGCGG TTAGGAGCTGGAGACCAGCCTGGCCAACACAGCGAAACCCCGTCCCCACCAAAAAAATACGAAAACCAG TCAGGCGTG

 $\label{eq:condition} \textbf{AGTCATTTTATTCATCTTAGCAAGAGAGATCTCATGCCTCTATTTGGTTCTTTAATGGGTGAGGGATTTGGGGCCTAGAAAATGAGGGGAAATTGAGAAGAAGAATACTCTTAAACCTCCCAGCAAGAGAAAATGTCTTGCTGGGAT$ 

AAAAGGATTAAAGCCTGTTATCACTCGCCTGCTACAGCATGGGCTTCTAAAACCTATAAACTCTCCTTACAATTCCCCATTTTACCTGTCCAAAAACCGGACAAGTCTTACAGATTAGTTCACTATTCCCCTGCACCCCCTCGTCCCA

 $\label{eq:condition} \textbf{AGTTCTGTCCAGGGCAATCAGGCAAGAGAAAGAAATAAAAGGTATCCAATAGGAAGAGGAAGTCAAATTGCCTCTGTTTGCAGATGACATGACTGTATATGTAGAAAACCCCATCGTCTCAGACCCAAAACTCTTTAGGTTGCAA\\ \textbf{AGTTGCAA}\\ \textbf{$ 

 $\label{eq:condition} \textbf{AACAGGCTGAGGTGAGCTCATGCCTATAATCCCAGCACTTTGGGAGGCCGAGGCAAGCAGATAACTTGAGGGTCAAGGGTTCGAGACCAGCCTGGCCAACATGGTGAAACTATGTTTCCACAAAAAAACGCAGAAATTAGCCGGGC$ 

 $\label{eq:condition} \mbox{ACGGTTGCTTCACCACCTCACTGATGTGTGCTATCTTCCAGGCAATAATGACAAGAGCCACCATTT ACTTATTAGGCCAGGTGCAGATTAAGTACTTTGCCTATATCAATTCATTACATTCTCACCAAACTCCTC CAAGGGAGA$ 

 $\label{total} TTCATACCATGGATGCAGGGATGGTTTAACATACACGAGTCAATAAATGTGATATACCACATAAACAGA\\ ATTTAAAACCACATGATCATCTCAATAGACACAGAAAAAGCATTTGACAAAATTGAGCATCCTTTGAT\\ TAAAACCCT\\$ 

 ${\tt GAGATTGATAGTGTGGGGAGATAGCTGGGGAGAGGTAGAGGTGGCATAAGAATGGAAACAAGAGTAAGAGTGAAAGAATAAGACTTCATCAGGGTGAAAGTATTGGAGTGTACCCTGTCAGCAAAGATCATTA$ 

 $\tt CTCAGCCTCCCAAAGTGCTGGGGTTACAGGTATGAGCCACCACGCCCAGCCAACACAAACCAATTTTAGTTGGGAGTCTGTCAGCCACTATCTAAAATCTTTTAAGATTCCTGTCTGGCAGGCCAGGCGGGGGCCACCCTGTCACACCTGT$ 

 ${\tt TACAATCTAAAGTCGGCACAGTGGCTCGTGCCTGTAATCTCAGCACTTTGGGAGGCTGAGGTGGGAGGAGGAGGAGGAGGCCTGGGCAACATAGTGAGACCCCGTTTCTACAACATGTATTTAAAAATTAGCTGGGTGTGGTAGTGTGT$ 

 ${\tt TGAATGAGGGTATGTCATGAGCATCAAAAGGGAAAAAAAGTATGAAAATCCCTAAGAGTTTTACTCCAGAGGGTCATATAGATTGTGCGTTCTTTAGCTAACATTTTAAAACAAATATCTGAAATCACTTGCTTAACCCCTTTGAAT$ 

 ${\tt CAGATTTTATTATTTCAGACAATTGTTGCAGCATGCGAAATTTTTAAAATTACAATTTACTTATTTTGAGTCTTTATCTTCTTCTTCCTGCATGTTGTTCATGCTCCACTGCATTAATCTTCATCTATTTACATTTCAGTCAACCTGTT$ 

 $\label{thm:condition} \begin{tabular}{l} GCCCTGATCATCAAGGCCCTCAAGGAACCACCAGGAAGAAAACCACTAAACCACGT\\ GGGAATATCACTTTTGATGAGATCGTCAACATTGCTCGACAGATGCGGCACCGATCCTTAGCCAGAGAA\\ CTCTCTGGA\\ \end{tabular}$ 

 ${\tt CCAGGAGTTTGAGACCAGCTGAGCAACATGGTGAAACCTCGTCTCTACAAAAAATACAAAAATTAGCTGGCATGGTGGCACACGCCTGTAGTCCCAGCTACTCGGGAGGCTGAGGTGGGACAATCACTTGAGCTAGCAAGGTTGAG$ 

 ${\tt AAAATATATATATATATATATATATATTTTCTTTTGTATTCAATGAGGCCATAATTTCATCCTGCC} \\ {\tt CCATGCAGAGTTAACACGTGGTCAAGCTCTTTGGCCTAACCTTGTGTAGATCTTTCCTAAAAACTAAGG} \\ {\tt ACTGTGTAC} \\ {\tt ACTGTGTAC} \\ {\tt CCATGCAGAGTTAACACGTGGTCAAGCTCTTTGGCCTAACCTTGTGTAGATCTTTCCTAAAAACTAAGG} \\ {\tt ACTGTGTAC} \\ {\tt CCATGTGTAC} \\ {\tt CCATGTCAC} \\ {\tt CCATGTCAC} \\ {\tt CCATGTCACC} \\ {\tt CC$ 

 ${\tt TTGATGAACCCTGGTAGTATTTATAATATTACCAGCTGGGCACGGTGGCTCACACCTGTAATCCCAGCACTTTTGGAGGCTGAGGCGGGTGGATCACCTGAGGTCAGGAGTTCGAGACCAGCCTGGCCAACATGATGAACCCCATC$ 

 $\label{thm:condition} \begin{tabular}{l} GCCAATAAAAAGTTCAGAGGTAAAAAACAAAACCCACATTTGTGTTTTCTTATCATCCCACTG\\ GCACCTACATTTTTTTTTTTTTTTTTGGGGAGTGTGCTCTTTCGCCCAGGCCAGACTGCAGTGGCG\\ CTATCTCAG\\ \end{tabular}$ 

 ${\tt CAATTCAATGTTGGATGGATAGTCTTTTCAATAAGTAGGGCTAGAATAACTGGATATCTACGGGCAAAAATGTAAACCTCAACCTTACACATTATATACAAATTAAAGCATAGATCTAAATGGAAAATGTAAAATCATAAAATCTTT$ 

 ${\tt GGAAAACAGCACTTTTGAATAAAGTAAAATTGGTGTTGTTGCCATAATAGCATATTTTGAAAATATTTT}\\ {\tt CTGATTAACTTAGGTTGAAAATCTTACCTGAACATTATTTTAATATGTTCAGGTAATATTATGATTATT}\\ {\tt TTAATACAT}\\$ 

 $\tt CTTCTAGTAAACCATGACCTTCTAACCTCCAGGCTTTCACCTGGAACTCTTTCCCTTCCACTACTGCCTGGGTAATGACTTTTGCCATCACAGTTCTGTCAAGTTAGGACTTTCTTCAGAAAGTTTCCTGTGACCTTTTCCAGCCCTCC$ 

 $AGAATATCATATAAATCACCTAACAGTTTAGACACCACTAACATGCTATTTCTTTAGAGATACCTC \\ TCCTCACTAGACCATCTAAAAGAGAACCATCCCCTTCCCTCTTTAGCCCCTAACATATCCTTATTTACC \\ TTTGTATCA$ 

 $\tt CTGCTAATTTTTGTATTTTTAGTAGAGACAGGGTTTCGCCATATTGGCCAGGCTGGTCTTGAACTCCTGACCTCAGGTGATCCACCCGCGTCGGCCTCCCAAAGTGTTGGGATTACACGCCTGGCCTAATTTTTGTATTCTTAGTAG$ 

 $\label{eq:total} \textbf{ATTTTGAGGTGAATGCATGTTTTACTACTTAACTACCTCTGAAATTTAGGGGTTTTTTTGTTTT\\ \textbf{GAGACGGAGTCTCGCTCTGTCGACAGGCTGGAGTGCAGTGGCGCGATCTCGGCTCATTGCATCCTCTGC\\ \textbf{CTCCCGGCT} \\ \\ \end{matrix}$ 

 ${\tt TATGGTTCGGGCTGATTCCTAAGAAATCTGCCAAATTTCAAAAATAGTTTCCCTTGTATTTTACTTGGGAATTTTTATGCTTTAGGTTTTACACTTAGGCCTATGTTCCATTTCAAGGTAATTTTTATATAAGCTGAATTTTGATG$ 

 $\label{eq:condition} \textbf{ACATGCTCAGCAGGAGAGCATGTGTGTTTTCATGAAGAATTATGCTGAGATAGGTAATGGATGAGGAAGAATTTGGACCTGAAGTAATGGGGGGCTGTCCATGAAGCCTTGCAGTAGTATAGCCCAGGTAATTTGCTGAGCC$ 

 ${\tt TATAGAGACTGGTCTCACTATGTTGCCCAGGCTGGTCTCAAACTCCTGGGCTCAAGCGATCCTCCTGCCTTGCCCTTGCCCTTCCAAAGTGCTGGGATTACAGCCTCGACTTCCCGGGCTCAAATGATCCTCCCACCTCAGCCCCTCAAGTAG$ 

 $\tt CTGTCACCCAGGCTGGAGTGCAGTGGTGCGATCTCAGCTCACCTGCACCTCTGCCTCACAGGTTCAAGTGATTCTCCTGCCTCAGCCTCAAGTAGCTGGACTTACAGGCACCCGCCACCACCCAGCTAATTTTTTTATATTTT$ 

 $\tt CACCCACTGACCTGCGCCCACTGTTGTGGTGCTCCCTAGTGAGATGAACCCGGTACCTCAGATGGAAATGACCCGGTCTCTGCGCCGCTCACGCTGGGAGCTGTAGACCGGAGCTGTTCCTATTCGGCCATCTTGGCTCC$ 

 ${\tt GAAAGGTGCTCACTGGGATGGGGCCCAAGGGAACTTTCTGGGTGATGAAAATGTTGTATATCTTGATCTTGGTTGTGGTCACAAGAATACATTTGTAAAAATTTTGGCATACTTTACGTTTATGATTTGTATATCTTTATTACAC$ 

 ${\tt CCTGGGTAATATGGTGAAATCTTGTCTCTACTAAAAACACAAAAACTAGCCTGGCATGGTGTGCACC} \\ {\tt TGTAATTCCAGGTACTCGGGAGGCTGAGGCAGGAGACTCGCTTCAACCTGAGAGGCGGAGGATGCAATG} \\ {\tt AGCCGAGAT} \\$ 

 $\label{eq:cocc} \textbf{AGGGCGCCACCGGGATGGAACGCACCGCCCCGACGTGATTTTCCAGAGAACTGAGTTCCTTGAATATTAAAATTAACCTTTTTTAATAACAGAAATGATATGTCCATTGAAGTAGGGCTGGATTTATCTTATGACAGTGCTTGT$ 

 $\label{thm:congctactt} GCGTGGTGGACGCTTGTATTCCAAGCTACTTGGGAGGTGGAGGCATGAGAATCACTTGAACCTGGGAGA\\ TGAAAGTTACAGGGAGCCGAAATTGCATTACTTCACTCCCACCTGGGCGACAGAGTGAGATTCCATCTC\\ AATAAATAA$ 

AAGGAACATTAGGAACATCCACAGTGTTCCATCCAGGAACCTTCACCGTGGAAACCCTTGTGCTCATGGGCGTGGTCTCAAGACACAGTCAGCTGTTGGGGATCAGAGGCCACACTCATCGTAGCAGAGGCAGGACCAACTGGGA

 $\label{eq:condition} \textbf{AGCAAGTTGTTTTTACTCCATTATCCATTGATGTCTTTTTAAAAGTTGATCCATATTTTGTCGTCTTGT\\ \textbf{CTCCATGATGCGTGACAGAGGTTCTCTGTATGTCTTGTTCTAGCTTTTGCTCTGCATGCCTGCAGGAAT\\ \textbf{GTCTGAAGC} \\$ 

 $\tt CCACGCCACCGTGCCAGGCTAATTTTTATTTTCGGTAGACACGGTGTCTCACTATGTTGCTCAGGCTGGTCTCAAACTCCTGGACTTAAGTAACCCTCCCACCTCGGCCTCCCAAAGTGCTGGGATTACAGATGTCAGCCTGTGC$ 

 $\label{eq:GGAGCTGGAAATCCACTGGCTTCAGCGGGGTGTAAGCACGACCAAAGCGCCTCTCCTCTGCAGCCAGA\\ AACAGTGATTCATTTGATTTTAACTTTTAACATTAGCATTTTCTCATGACTCACTGATAATTTAATAT\\ GGAATTTAA\\ \end{cases}$ 

 ${\tt CAACAAAAGTGACAAACTTCTAACAATATTTACAAAAGAAAAAGAGAAGAGAAGACAAAATATTGACATCACAATATGAAGCATATAACAAAAGACATATAAGAAATATCACAACAGACCCCGTAGATATCAAAAAGACATATAAGAAATGCTATGATAATACACAT$ 

A GAGCACCCATTTGGATGGCCTTAGTTTCTCTGTCTCCACCCTTCCCAAGGTCAAGCTGACACTGCATGGTCCAAGGTTCCCCATAATAAATCACGTTGTTAACTCCCAGATAGGCAGGAGATTCCAAGGACTTAGAGGTTATTTCCT

 $\label{eq:condition} \textbf{ACACAAATATACTAACAGTGTGATTCATAATAGCTCCAAACTAGAAACAACCCAGATATCCATCAGTGGGGGAGAAAAATAAAATAAAATAAAATAAAAAAATACAGTCAATAAGAGAAAAAATAGGCCCTATTGACAGG$ 

 $\label{eq:condition} \begin{minipage}{0.5\textwidth} AGGCAACAAGAGCCGAGGCCCAGTGGCTCATGCCTGTAAT \\ CCTAGCAGTTTGGGAGGCCGAGGTGGGTGGATCACCTGAGGTCAGGAGTTTGAGACCAAAATACAAAAA \\ TTCGCCGGG \\ \end{minipage}$ 

 ${\tt AAAGACTATATTAGCCAATATAATTCCTTTGTTTTTAGTGTGAAATACTATGGTAGGGCCTAATTAAAA} \\ {\tt ATAAAAACAATATGGAGAACAGTAAAACAGTCATCAAGTGACTCTAAGCTTGTATTTACTCTAAGCTTGTATTAAGCT} \\ {\tt TATTAAGCT} \\$ 

 ${\tt TAACACAGTGAAACCCCGTCTGTACTAAAAATACAAAAAATTAGCTGGGCGTAGTAGTGGGTGCCTGTAATCCCAGCTACTCGGGAGGCTGAGGCAGGAGAATCGCTTGGACCCGGGAGGTAGAGGTTGCAGCGAGCCGAGATCGC$ 

 ${\tt AAAATACAAAAAATTAGCTGGGCATTATGGCGGGCGCCTGTAGTCCCAGCCACTCAGGAGGCTGAGGCAGAGAATGGAGTGAACCCAGGAGGCGGAGCTTGCAGTGAGCAGAGATGGCGCCACTGCACTCCAGCCTGGGCGACAG$ 

 ${\tt AAACTTTGGCCAGGCATGTTGGCACATGCCTGTAGTCCCAGCTACTCAGGAGGCTGAGGCAAGAGGATTGCCTTGAGCCCAGGAATTCAGGGCTGCAATGAGCCATGATGGTGCCACTGCACTCCAGCCTAGGTGACAGAGTGAAACC$ 

 $\tt CTGTTACACTGTCTTCATATTTAAAGATGAAAAAGTCCTCCTTTTTATTCATCTTTTATTCTGTG\\ TGATCGATTTCTCCCTCCACATAACAATAATTTTGCTTTCTAGTTCTGTAGTTATATAAACCAAAGCTG\\ CTTATAAAC$ 

ATATTCACACTGCTGATAAAGACATACCCGAGACAGGGAAGAAAAAGAGGCTTAAATGGATTAAGGGTT CCACATAGCTGAGGAGGCCTCAGAGTTATGGCGGTGGATGAACAGCACTTCTTACATGGCAGTGGCAAG AGAATATGA

 $\tt CTAAGCCCAGCATGTATTAGCTCTTTTCCCTAATGCTCTCCCACCCCACTATCCCCCATCAGGCCCCAGTGAGGTGTTGTTCCCCTCCTGTATCCATATGTTCTCATTGTTCAGCTCCCACTTACAAGTGAGAATATGAGGTATTT$ 

 $AGAATGAACAGCAGAAATACTAGAAGAAAATCGAAAGAATTAAGAGGGAAAAAGAAAAGACAGATCATAA\\ AAATGCTTGCTTTCAGAAAGCATATTATATAAATTAATATACTATGGACAGGCTGGGCCATGGTACAAG\\ AATGGCAAA$ 

 ${\tt AATTAGCTGGGCATGATAGCGGGCACCTGTAATCCCAGCTACTCGGGAGGCTGAGGCAGGAGAATTGCTTGAACCCGGAAAGCAGAGGTTGCGGTGAGCTGAGATCGCACCACTGCACTCCAGCCTGGGCAACAAGAACAAGAACAAGACTCT}$ 

TGTCCCAATCAGCAGAGAAAGTCTTGACTTTATTATTTTCTGAGGTTTGTCATTTTCAAATCTTTCCAA
ATATGAAATTATATAATAATTTCAAATAAAATTATGTAATCTGAACCCTTTGAATTCCACCATGCCCCT
CTAACCACA

 ${\tt GACTACAGGTATGTCACCACGCCTGGCTAATTTTTTGTATTTTTTTAAAGGTGAGGTTTCACTATGTTGCCCAGTCTGGTCTCAAACTCCTGGGCTCAAGCAATCTGCCTGGCTCAGCCTCCCAAAAGTGCTGGGATTACAGGCG}\\$ 

 $\label{thm:condition} \textbf{GAGTTTTGCTCTGTCACCCAGGCTGGTGTGCAGTGGCATGATCTCAGCTCACTGCAACCCCTGCCTCCCCGGGTTCAAGCAATTCTCCTGCCTCAGCCTCCCGTGTAGCTGGGACTACAGGTGCGCACCACCACCCTGGCTAATTTT$ 

 $\label{eq:gccaacaa} \textbf{GGCCAACAAGGTGAAAACCCCATCTTTACTAAAAATACAAAAATTAGCTGGGCGTAGTGGCAGGTGCCTGTAATCCCAGCTACTCAGGGGGGCTGAGGCAGGAGAATCTCTTGTAGCTGGGCATAGTGGCAGGTGCCTGTAATCCCAGC$ 

GACTGTGCCACTGCAACCTGGCAACAGAGCGAGACCCCGGGCTCTGACTGTGCCACTGCACTCC AGCCTGGCAACAGAGCGAGACCCTGGGCTCTGACTGTGCCACTGCACTCCAGCCTGGCAACAGAGCGAG ACCCTGGGC AGGAGGGAAACGAAGCAGCTGAAAAAGAAACAAATCAATAATAATAACAGTAAAAATAGCCATAACACA GCCTACACTTCTGAATTTTGCAAGCCTCATTCTTTGGGGATGTTTTGGTGAGCTGGAAGGAGGAGCAGA GGGAAGCTC

 $AGAAATTCTGATCTAAAATAATGGTCTCTACTGCGTGTGTAAGAGTCCAGCCCAGGAAAATCTTTTCTT\\ CCTTTTGTGGTATTCACAGCATAGGGTCAGGGGTAATTGCCTCTGTTAGTAAAATAACATGCAGAACCT\\ CCAGGGTTT\\$ 

 $\label{eq:condition} GCGGATCACTTGAGGTTGGGAGTTCGAGACCAGCCTGAGCAACATGGAGAAACTCTGTCTCTAGTAAAAATACAAAATTAGCCGGGCATGGTGGCACATGCCTGTAATTCCAGCTACTCGGGGGGCTGAGGCAGGAGAATTGCTTGA$ 

ATCTCTCAACTTATACAAAAATCAACTCAAGATGGAGCAAAGACTTAAATCTAAGACCTAAAACCATAA
AAATTCTAGAAGATAACATCAGAAAAACCCTTCTAGACATTGGCTTAGGCAAAGACTTCATGACCAAGA
ACCCAAAAG

 $\label{eq:condition} \textbf{ACAATTTTTTGTAGGGGCAGGGTCTCACTATATTGCCCAGGCTGGTCTTGAACTCCTGGGCTCAAGTGTTCCTCCTGCCTTGCCTTGGCCTCCCAAAGTGCTGGGATTGCAGGCGTGAGCCACTGTGCTGGTTCTTCTCTTATT$ 

 ${\tt TCACTTTTTAATGGCAGACATTTTGACTGGTGTGAGATGGTATCTCATTGTTGTTTTTGATTTGCATTTCCATTTCCATTGTTGTTTTTGATTTGAGAAAGTTTCTGTT$ 

 $\tt CTACTTGGAAGGCTGAGGCAGAGATGGCGTGAACCCAGGAGGCAGAGCTTGCAGTGAGCCGAGATTGCGCTGCACTCCAGCCTGGGTGACAGAGCCAGGCGTGTCTCAAAAACAACAAAAATTAGCCAGGTGTGGTGACAT$ 

ATGTTTGAAATTGTCAAATAAACATGGTGCCTTTCCAGTAGCCACTCAGAATTCCTCCTCTCTGTCCAC AAAGCATTGTCACCCTCCCTGTCCCATTTGCCCCAGCCCTGTGGAGCTCGCTGAGCTGGCACCATCATC TCTTGTAAT

 $AGAGATAATACAAAGAATGAGACGTAATATTTGAAGAAATTGTGCCTAAGAACTTTCTGAAACTGATGA\\ AAGATATTAATCTACAGGTAAAGAAAATGAAACTCTTGGCTGGGCGCAGTGGCCAGATAAGCACTGTGG\\ GATTATCTG\\$ 

 ${\tt AATAACTCTTTTTTTTTTTTTTTTTTAGACGGAGTCTCGCTCTGTCGCCCAGGCCAGACTGCGGACTGCGGACTGCGGGCCAATCTCGGCTCACTGCAAGCTCCGGGTTCACGCCATTCTCCTGCCTCAGCCTCCCGAGTAG$ 

TCACTATGTTGGCCAGGCTGGTCTCAAACTCCTGATCTCGTGATCCACCCCACCTCGGCCTCCCAAAGTGCTGGGGATTACAGGTGTGAGCCACCACGCCCTGCCATAATTTTTGTATTTTTAGTAGAGACAGGGTTTCACCATGTTGA

 $\label{eq:gamma} \textbf{GGTCAAATGGTATTCTAGATCCTTGAGGAATGGCTACAGTGTCTTCCACAATGGTTGAACAGGTTTACAGTCCCATCATAGTGTAAAAGTGTTCCTATTCCTCCACATCCTCCAGCACCTGCTGTTTCCTGACTTTTTT$ 

 $\tt CCTCTATTCTGAGAATAAATGAGATAATGTATTTAGTGCCTGGCAACCACTTTGAAAAACATGGTGGCAGTTTCTTCTAACCTTAAATGTGCACTTATTTAGTCGAGAGAAATAAAAACACATGTCTATCAAAGATCTGTGTACAAGTGTACAA$ 

 $\label{eq:condition} \textbf{AGGGTCTTACTCTGTCACCCAGGCTGGAGTGCAGTGGTATGAAGATGACTCACTTCAGCCTCTGAGTGGGACTGCAGGGTGTGCGCTCAGCCTCTGAATAGCTGGGACTGCAGGTGTGCGCTACCACGTCTGCCTAATTT$ 

 ${\tt ATTATTTTACTATTTTAGTGAGGGGAGTGTAGCAGGGCAACAGGTGGGGAGAAGGTCAGCAGGGAAAC}\\ {\tt ATGTGAGCAAAGGAATTAGTATCATGAGTAAGTTCAAGGAAAGGTACTGTGCCTGGATGTGCACGTAGGCAGATTTA}\\ {\tt CTAGATTTA}\\$ 

ATTTCCTTTAAGATTTCACTATTTTTCAAAAGATGGAAAAGTAATTAAAACACTAACCATCAAAACAGC AGTTCTCACAAGTAGTCATCACCATCATGGGAGCTGCCAGCAAGCTATCCACATGGAATCATCTTAT CCACACTGG

 $\label{thm:condition} \textbf{GACCTCAGGTGATCCGCCCTCGGCTTCCCAAAATGCTGGGATTACAGGCGTGAGCCACCGCACCCT}\\ \textbf{GCCCAAAATGTTTATGTTTTTTGAGACAGGGTCTCAGTGCCGTCGCCCAGGCTGGAGTGCAGT}\\ \textbf{GGCGCAATC} \\$ 

 $\label{eq:condition} \textbf{GGTTACAGGCAATCACCACGCCCGGCTAATTTTTGTATTTTAGTAGAGACGGGGTTTCGCCATGTTGACCAGGCTGGTCTTGAATGCCTGACCTCAGGTGATTAGCCCGCCTCGGCCTCCCAAAGTGCTGGGATTACAGGCGT$ 

ACTTGATAGGTTGAACGTTATTAAAGTGGAAAAAATTCTGCTTTGTGAAAGAATACAAGAATGAAAAGAA ATACTTGGATAAAAATATTTGCAGAACATATAAGGGACTTGTATTAAAAATATATAAAGAACTTGTAAAA CTCAACAAT

 $\label{eq:condition} \textbf{ATGGTGTGATCTGGGCTCACCTCCACCTCCCAGGTTCAAGCCATTCTCCTGCCTCAGCCTCCCAAATAGCTGGGATTACAGGTGTGAACCACCACGTCCAGCTAATTTTTAATATTTTTAATAGAGACGAGGTGTCGCCATG$ 

 $\label{thm:condition} \textbf{GGGGTCCTCCCCAAATAGCTGGGACTACAAGCACATGCCACCACATCAGGCTAGTTTTAAATTATTTTTTGTAGAGATAGAGTCTCACTATGTTGCCCAGGCTGGTCTCAAACTCTTTGTCTCAAGTGTTCCCCAGGCTGGTCTCAAACTCTTTGTCTCAAGTGATTCCCC$ 

 $\label{transform} \textbf{TGAATGAATTCTGTTCTTTGTAACCAAACACTCTGGCAGATGCTTAACCCTACACCTCGCTTCCTCATA\\ \textbf{TACAAATTATATAATTAATAAGAGTACTTATCACAGAAATAATGTAAGATATTAACAGAATAATTCATT\\ \textbf{AGTTGTAAG}$ 

 ${\tt AATGGTATTTAAAATTTTTCAGTTTCCTATTGTTTGTTGCTGGTATATAGAAATACAATTGAGTTTTAT}\\ {\tt ATATTGATCTTTTATCCTACAACCTTGCTAAACTCACTTATTAGTTCTCTGCAAGGCAGTAGAAACCAG}\\ {\tt AATGACACA}\\$ 

 ${\tt CAGGCACAAGCTATCACAAAAAAAAAAAGGAAACATAGAGTGTTTGATGTCCACAAATGTATTCACTGTAGGTAACTTAGAAATACACCACAAATATACACCCACAAATATACACCACTAGAAACAACCAAATATTTTG}$ 

 $\label{eq:tartcar} \textbf{ATGGCTAAATCAAGCTGATTACTTCACTTTTTTTTTTTAAGAGACAGAGTTTTGCTCGGTTACCCAGGGTGGAGTACAGTGGCATGATCTCGGCTCACTGCATCCTCTGCCTCCAGGGTTCAAGCGATTCTT$ 

 ${\tt TACAGGAGCACCCAGATTCATAAAGCAAGTCCTCAGTGACCTACAAAGAGACTTAGACTCCCACACATTAAATGGGAGACTTTAACACCCCACTGTCAACATTAGACAGATCAACGAGACAGAAAGTCAACAAGGATACCCAGGA}$ 

 $\label{thm:condition} \textbf{GGGTAATTTTTGTATTTTAAGTAGAGATGGAGGTTCACTATGTTGGCCAGGTTGGCCTTTAACTCC} \\ \textbf{TGACCTCAGGTGATCTGCCTTGGCCTCCCGAAGTGCTGGGAACATAGGCGTGAGTCACCGCGCCC} \\ \textbf{AGCTTAAAC} \\$ 

 ${\tt GATTTCATTTTGACCCCGTGATCACTCTGGAGCAGGTAATTTAATTTACATGTATTTCCATGGTTTTG} \\ {\tt AAGGTTTCTTTTGGAGTTGATTTCCAGTTTTATTCCACTGTGGTCTGAGAGACTGCTTGATATAATTTC} \\ {\tt AATTTTCTT} \\ {\tt CATTTTCTT} \\ {\tt CA$ 

 $\label{eq:control} \textbf{GCTTCTCGTGTCTCTAGCTTTCTCTTAAACTTACCTCTTCACTGTGGTCAACCTTCCACCCTGCATT\\ \textbf{CCCCCTTCTTCTCCCCTTAGCCTGTGTTCTCAAGAACTTAAAACCTCTTCAACTCACCCTGAACTAAAA\\ \textbf{CCTAAATGC}$ 

 ${\tt TCATTCTCCATCCAGTTTTGTTCCCTTGCTGGTAAGGAGTTGTGATCCTTGGGAGGAGAAGAGGCATTCTGGTTTTTGGAATTTTCAGCCTTTTTGTGCTGGTTTTTCCTCATCTTTGTGGATTTATCTACCTTTGGTCTTTTGATGT$ 

 ${\tt TATTCAGTTTTTAAAGTGCAGTAATTAGATTTTACCAGTCTTGTGCATAAGATACAAAGTGAGACTATCTGGCTTTTTAGTGCCACCCATAAAAGACTATATGGCTTCTGCCTGTTCTCTTGGGACACTTTGCATTTGGAGCCTGAGC$ 

AAATCATGTAATGTCTGCTCTCAGATCTTAATTAAACTAAAACCAATGACAGAAAGATAACTGGAAAAT ATCAAAATTTACAGAGATTAAGCAACACACTTCTAAACAATACATGGGTCAAAAGAAACATCTGAAGAA AAACTTAAT

 $\label{total} TGAAACAGGGTCTCACTCTGTTGCTTAGGCTGGAGGACAGTGGCACCATCTTGGCTGACTGCAACCTCA\\ ACCTCTTGGGCTCAAGCGATCCTCTCACTTCAGCCTCCCAAGTAGCTGGGACTACAGGCATGCACCACC\\ ACGCCCAGC\\$ 

 ${\tt ATATAAAATTAGCTGGGCGTGTGGCGGGCACCTGTAATCCCAGCTACCTGGGAGGCTGAGGCAGGAGAAACCTCGGTGAGCCAGGGGAGAGTTTGCGGTGAGCCATTGCACTCCAGCCTGGGCGACAAGAGCGAAACCTCAGTCTC$ 

 ${\tt TCAGGATTTTTCTCTGGTTCTTTTTATAATACCTATCTCTTTGGTAAATTTTCATTAATATCTTGTGT\\ {\tt TGCTTTTTCTGACTTCTTGTATTATCTGTGTTCTCTTGTATCTCACTTAGCTTTTTAAATATCA\\ {\tt ATATTTTGA}\\$ 

 $\label{thm:condition} {\tt GCATGTAGAAGTTGCTCAGTACATTGAATGAAATATCAAGACTGGAAGACTTGGAGGCCAGGTGCGTGGCTCATGCCTGTAATCCCAGCACTTTGGGAGGCCGAGGCAGGTGGATCACTTGAGGTCAGGAGTTCAAGA$ 

 ${\tt GCTGGGCATGCTGTAGTCCCAGCTACTTGGGAGGCTGAGGCAGAGAATTGCTTGAAT}\\ {\tt CCCAGAGGCGGAGGTTGCAGTGAGCCAAGACTGCGCCATTGCACTCCAGCCTGGGTAACAAGAGCAAAACTGTCTTAA}\\$