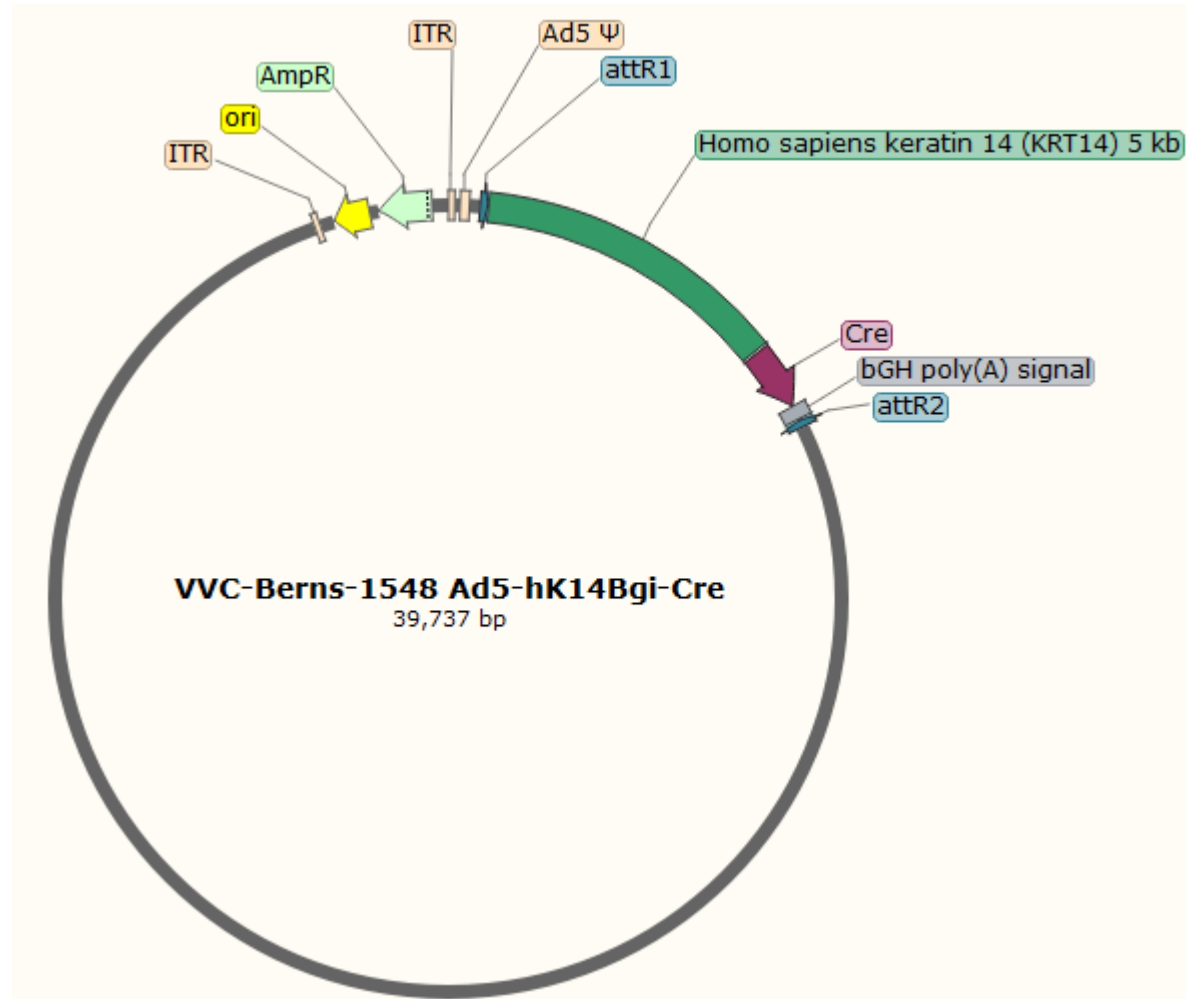


Berns-1548 Ad5-hK14Bgi-Cre
Plasmid Origin: Dr. Anton Berns and
Kate Sutherland
pAdPL-DEST-hK14Bgi-Cre



The investigator used a replication deficient Adenovirus pAd PL-DEST from Invitrogen Life Technologies/Thermofisher. Please see below information.

Please acknowledge Dr. Anton Berns from the Netherlands Cancer Institute in any publications using this virus (a.berns2@nki.nl). Publication: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5065004/>

Inserts:

Homo sapiens keratin 14 (KRT14) Promoter, 5kb
Cre-recombinase coding sequence, 1.5kb.

Vector Bio-safety Information

At the University of Iowa, all varieties of viral vectors produced at the Viral Vector Core are required to be handled at Biosafety Level 2 (BSL2). In animal studies, adenoviral vectors require ABL2 containment. Please check with your institution's Biosafety Officer to confirm local requirements

The ViraPower™ Adenoviral Expression System

<https://www.thermofisher.com/us/en/home/references/protocols/proteins-expression-isolation-and-analysis/adenovirus-protocol/virapower-adenoviral-expression-system.html>

The ViraPower™ Adenoviral Expression System facilitates highly efficient, *in vitro* or *in vivo* delivery of a target gene to dividing and non-dividing mammalian cells using a replication-incompetent adenovirus. Based on the second generation vectors developed by Bett et al., 1994, the ViraPower™ Adenoviral Expression System takes advantage of the Gateway® Technology to simplify and greatly enhance the efficiency of generating high-titer, recombinant adenovirus.

The plasmid, pAd-DEST, is an E1 and E3-deleted expression vector into which the gene of interest will be cloned. Expression of the gene of interest is controlled by the human cytomegalovirus (CMV) promoter (in pAd/CMV/V5-DEST) or the promoter of choice (in pAd/PL-DEST). The vector, an “all in one” adenoviral plasmid, contains the elements required to allow packaging of the expression construct into virions (e.g. 5' and 3' ITRs, encapsidation signal, adenoviral late genes). For more information about the pAd-DEST expression vectors, refer to the pAd/CMV/V5-DEST and pAd/PL-DEST Gateway® Vector manual.

Adenovirus enters target cells by binding to the Coxsackie/Adenovirus Receptor (CAR) (Bergelson et al., 1997). After binding to the CAR, the adenovirus is internalized via integrin-mediated endocytosis (Russell, 2000) followed by active transport to the nucleus. Once in the nucleus, the early events are initiated (e.g. transcription and translation of E1 proteins), followed by expression of the adenoviral late genes and viral replication. Note that expression of the late genes is dependent upon E1. In the ViraPower™ Adenoviral Expression System, E1 is supplied by the 293A producer cells. The viral life cycle spans approximately 3 days. For more information about the adenovirus life cycle and adenovirus biology, refer to published reviews (Russell, 2000).

Adenovirus Background:

Adenoviruses are very important tool in basic research. They are used to identify proteins role in different biological processes both *in vivo* and *in vitro*.

Characteristics:

- Episomal gene expression.
- Infects dividing and non-dividing cells.
- Transient high-level protein expression.
- Accommodates inserts of up to 7.5kb. Larger inserts can be added, provided that an equivalent part of the viral genome has been properly deleted.
- High viral titer can be produced, 1E+10 to 5E+10pfu/ml (1E+12pt/ml) to 8E+10 to 1E+11/ml (1E+13pt/ml).

Disadvantages and adverse effects:

- Elicits host immune response, thus depleting the number of transduced cells *in-vivo*.
- Viral particles can be neutralized by the host immune response.
- Short-term expression of the transgene due to lack of integration into the host genome.

Recombination:

The recombinant adenoviruses can revert to wild type during virus production, thus packaging replication competent particles (RCA). For this reason, each new lot produced at the core is tested for the presence of RCA by immuno-staining.

Storage Buffer:

A195 Buffer: [Evans RK](#), [Nawrocki DK](#), [Isopi LA](#), [Williams DM](#), [Casimiro DR](#), [Chin S](#), [Chen M](#), [Zhu DM](#), [Shiver JW](#), [Volkov DB](#). *Development of stable liquid formulations for adenovirus-based vaccines*. [J Pharm Sci](#). 2004 Oct;93(10):2458-7

Background on Virus production

All of our adenoviral vector preparations are made in HEK293 cells, purified by double CsCl protocol, and dialyzed and stored in our A-195 buffer. All preparations are titered on HEK 293 cells using the Clontech Adeno-X titer kits and also tested for replication competent particles (RCA).

Contact Information:

Viral Vector Core

University of Iowa
500 Newton Road

221 Eckstein Medical Research Building
Iowa City, IA 52242
Tel: (319) 335-6726
vectors@uiowa.edu

Hypothetical Plasmid Sequence. Sequence not provided by Dr. Berns and not confirmed by the Viral Vector Core. Particles were provided for amplification to the Viral Vector Core. Unknown cloning sites are represented with N.

pAd5PL-DEST-hK14Bgi-Cre

CATCATCAATAATATACCTTATTTTGGATTGAAGCCAATATGATAATGAGGGGGTGGAGTTTGTGACG
TGGCGCGGGGCGTGGGAACGGGGCGGGTGACGTAGTAGTGTGGCGGAAGTGTGATGTTGCAAGT
GTGGCGGAACACATGTAAGCGACGGATGTGGCAAAAGTGACGTTTTTGGTGTGCGCCGGTGTACAC
AGGAAGTGACAATTTTCGCGCGGTTTTAGGCGGATGTTGTAGTAAATTTGGGCGTAACCGAGTAAGA
TTTGGCCATTTTCGCGGGAAAACCTGAATAAGAGGAAGTGAATCTGAATAATTTTGTGTTACTCATAG
CGCGTAATATTTGTCTAGGGCCGCGGGGACTTTGACCGTTTACGTGGAGACTCGCCCAGGTGTTTTT
CTCAGGTGTTTTCCGCGTTCGGGGTCAAAGTTGGCGTTTTATTATTATAGTCAGTCAAGCTTGGATC
CGGTAACTCTAGAATTTCTCGAGCGGCCGTAGCCACTAGCATGCATCACAAGTTTTGTACAAAAAGCTGAA
CGAGAACGTAATAATGATATAAATATCAATATGTTAAATAGATTTTTGCATAAAAAACAGACTACATAAT
ACTGTAAAACACAACATATCCAGTCACTATNNNNNNNNNNNNNNNGTGAAAAACTGGTGAAGTTCC
AATAAAGCCTGCAGCTCATTAATAGTATTGTGTTGGCTGGGTGCAGTGGCTCATGCCTGTAATCTCA
GCACTTTGGGAGGCCGAGGCGGGTGGATCACCTGAGGTCAGGAGTTTGGGACCAGCCAGGCCAAC
ATGGCTCAACCCCGTCTCTACTAAAATTACAAAAAATTACCCGGGCTTCATGGTGAGCGCCTGTAGT
CCTAGCTACTTGGGAGGCTGAGGCAGGAGAATCGCTTGATCCTGGGAGGCGGATGTTGCAGTGAG
CCGAGATTGCACCACTGCACTCCAGCCTGGGCAACAAGAGCAAACTCCATCTTGTGGGGGGAAAA
AGTATTGTGTCAATGTTAATTTATGTTTTCAAAAATTGTATGATTCTTATGTAGTATGTTACATTAGGG
GAAGCTGGATGAAGGATACACAGGATACACAGGAACTCTGTCTCTATTTTGTAACTTTTTCTTAAAG
GCTAACATTATTTCATTTTTTTTTTTTTTGGGAGACAGAGTCTTGCTCTGTTGCCAGGCTGGAGTGCA
GTGGTGCGATCTTGGGTCACTGCAATCTCTGCCTCCAGGTTCAAGTCAATTCTCCTGCCTCAGCTTC
CCGAGTAGCTGAGATTACAGGCGCTTGCCATGACGCTCAGCTAACTTTTTGTATTTTTTAGTAGAGAT
GGGGTTTTGCCATGTTGGCCAGGCTGGTCTCAAACCTCCTGGCCTCAAGTGATCTGCCATTTTGGCCT
CCCAAAGTGCTGGGATTACAGGTGTGAGCCACTGTACCCAGCCAAGTCTAACATTATTTCAAATAAA
CATTTTTTAAAAAAGAAGCTGGGTGTGGTGGCTCATGCCTGTAATGCCAGCAGTTTGAGAGGCTGA
GGTGGGAGAATCGTTTGGGCCAAGAGTTTGGAGACCAGCCTGGCAACATGGTGAGACCTTGTCTCT
ACAAAAAAGTAAAAACTCGCTGGGCATGGTGGCAGTCTGGCTACTTGGGAAGCTGAGGTGGGAGG
ATCCCTTGGGCCAGGAGATTGAGGCTGCAGTGAGCTGTGATCCCACCACTGCACTCCAGTCTGGG
CAACAGAGGGAGACCCTGTGTAAAAAAGAGAGATGAAGACTGTATGAAGATGAAGGCAGAGATAGGGCAGC
AGACCTGAGAGTTCCGTGGCTCCCTGCCATCCAGTCCCTGGTGACTTGACGTGTCACGCTAAAGGC
TGTTCCAGAAGCCTTCCAGATTGGGCCGCCCCACATCTCATCTCAACCATCTATCTCTCCACCCA
GTTTTTACTATTGCTTTGCAAGGTGACAAGCACCCAGTCTGTTATGCGGTATAGTGGGTCAAATAGG
GTTCTCCAAATCGGGTCCACCTGGGACCTCAGAATGTGCCCTTATTTGGAATAGGGGTTTTGCAG
ATGTAAGTAAGGTAAGGTTTGGAGATGAGATCCTACTGGATTAGAGTGATTGCTAAATCCAATGAGTGT
CCTACAAGAGACTGAAAAAGACAGAGATGAAGACTGTATGAAGATGAAGGCAGAGATAGGGCAGC
CTGCCACAAGCCGAGGAACCTCAGGGAGGCACCAGAAGCTGGAAGAGGCAAGGAAGGGCTCTTCCC
CAGAGTCTTCAGAGGGAGTGTGGCCCTGCCAACACCTTGATTAGGGCTTATGGTTTTCCAGAATGTA
TTCCAGAGAGAATACATTTCTGTTGTTTTTTTTTGGAGACGGAGTCTTGCTCTGTTGCCACGCTGGAG
TGCAGTGGCGTGATCTTGGCTCACTGCAACCTCTGCCTCCCGGATTCAAGTGATTCTTCTGCCTCAG
CCTCTCGAGTAGTTGGGACTACAGGCACCTGCCACCACACCTGGCTAATTTTTGCATTTTTAGTAGA
GATGGGGTTTACCATATTGGCCAGGCTGGTCTTGAACCTCCTGGCCTCAGGTGATCCACCTGCCTTG
GCCTCCCAAAGTGCTGGGATTATATTCGTGAGCCACTGTGCCAGCCAGTTGTTTTAAGCCATCAA
TTTTGTGTAATTTGTTATGGCAGCCCTGGGAAACCAATCTTACTTGTCTGTGCTTTTTCTTCCATTTGTT
TGTATGTTAAGTAATGTTGATGTGCATTCTGCTTCTTTTATGCTGGGACCTTCTAAAGGCAGGG
ATCGTCTCTTCCAGTAGGCCATGCACTCCAAGGGCGGGGGCTGTCTGAGGTTTCTCCTTCTTAG
GATGCCATCTCCTGGTCCCCAGCACAGTCTCAGCACACAGTGTGGGCTCTGGAGGTGCTGCCTGG
CCCTGCCAGCTTACCTGTTTGGATTGGCAGAGGGCTCCCCATGCAGGGTGGTGCAGGGAGACTC
ACTAACACAAGAGGTCTGCCCGGGGCTCCTCCTTTACCCCTCCTTTTGGGGCAGGCTGGAGG
GAGGGTCAGGTAATGGTGTCTCACACAAAGTCTGCCTAGAAGTCCAGAGGTGGGGGGTACTCTGGGC
CTCAGCAGTCAGGACTGACAACCTTTAACCCCTGATGCCCCAGAAAATGCCCTCCCTTAAATGTC

TGAGTACCATGCTTCTTTGGCATCAGGGAGGGGAGGGGAGTGTGGTGTCTCTAAGTCTGCTCCCT
GCTTGGCTGGGTTGTTTGCAGCTCCTTGGTCACTGAGTCTTGTCTGCAGGGGTTGGCCTCAGGCT
CCAGGTTGGGTACGGTTCTAAGACCGGGTGTGGGGGATCAGGCTTATATTCCATGCTAGGGTTCT
GGTGTGGTGCCTGGGGTGGGGTGGGACTGCAGAAGTGCCTTTTAAGATTATGTGATTGACTGAT
CTGTCAATTGGTCCCTGCCATCTTTATCTTTTGGATTCCCCTCGGAGGAGGGGGAGGAAGGAGTTTC
TTTTGGGTTTTATTGAATGAAATGAAAGGGAAAGTAGAGCTGTTCTATGTCCCGGGCTCCGGAGCT
TCTATTCTGATCCCTGCATAAGAAGGAGACATGGTGGTGGTGGTGGTGGGTTGGGGTGGTGGGG
CACAGAGGAAGCCGGTACTGGGCTCTGCACCCCATTCCTCCGCTCCCAGATCCCTCTGGACACAGCAT
TTTTCTCCAGTGAGCACAGCCTCCCCTTGCCTTGCACAGCAACAGCAACATGCCTCCCAACAAAAGCA
TCTGTCCCTCAGCAAAAACCCCTGTTGCCTCTCTCTGGGGAAATTGTAGGGCTGGGCCAGGGTGGG
GGGACCATTCTCTGCAGGGAGATTAGGAGTGTCTGTCAAGGGCGGGTGGAGCGGGGTGGGGCCCT
GGCTTACTCACATCCTTGAGAGTCTTTGCTGGCAGATTTGGGGAGCCCACAGCTCAGATGTCTGT
TCAGCATTGTCTTCAAAGCTCCTAGGCCACAGTAGTGGGGGGCTCCCTTCTCTGGCTTCTTTGG
TGACAGTCAAGTGGGGTGGGGTGGGGTGGGGTGGGGTGGGGTGGGGTGGGGTGGGGTGGGGTGGGG
GGAAGAGCATTGGAGCCTCAGCAGGGCTGTTGGGGCTGTCTGAGGAGATAGGATGCGTCAGG
CAGCCCCAGACACGATCACATTCCTCTCAACATGCCTGCCGGGTCTGTGGAGCCTAGGGGCTGAT
GGGAGGGTGGGGTGGGGGCCGGAAGGGTTTTGCTTTGGGAGGTTGTCTGGGAGATTGCTGAAGTTT
TGATATACACACCTCCAAAGCAGGACCAAGTGGACTCCTAGAAATGTCCCTGACCCTTGGGGCTTC
AGGAGTCAGGGACCCTCGTGTCCACCTCAGCCTTGCCTTGGCACAGCCCAGCTCCACTCCAGCCT
CTACTCCTCCCAGAACATCTCCTGGGCCAGTTCACAAGGGGCTCAAACGAGGGCGCCTGAGCTG
CCCACACTAGGGATGTTCTGGGGGTCTGAGAAGATATCTGGGGCTGGAAGAATAAAAAGCCCCCT
AGGCCTGTTCTGGATGCAGCTCCAGCCACTTTGGGGCTAAGCCTGGGCTATAACAATGCCAACGA
GGCTTCTTGCCATACTCGGTTTACAAAACCCCTTTCACATACATTGTGCGATTGGATTCTCAGAGCTGA
CTGCACTAAGCAGAATAGATGGTATGACTCCCACTTTGCAGATGAGAACACTGAGGCTCAGAGAAGT
GCCAAGCCCTGGGTACAGAGGCGTAAATGGCAGAGCCAGGACCCACCTGACTCCAGGCTGTTTCC
TGGCCTCCATGAGGCCACCTGCCCTATGGTGTGGTGGATGTGAGATCCTCACCATAGGGAGGAGAT
TAGGGTCTGTGCTCAGGGCTGGGGAGAGCTGCCTGGATTTCTTTTGTGAGGGGATGTTGGGGTGGG
AACCACGATACACCTGACTAGCTGGGTGTATTTAGGGATGGGACAGACTTCTCAGCACAGCATGG
GAGGTCAGGCCTGGGAGGGCCCCCAGACCTCCTTGTCTCTAATAGAGGGTCATGGTGAGGGAGG
CCTGTCTGTGCCAAGGTGACCTTGCATGCCGGTGGCTTTCCAGCCGGTATCCATCCCCTGCAGC
AGCAGGCTTCTCTACGTGGATGTTAAAGGCCCATTCAGTTCATGGAGAGCTAGCAGGTAAGT
TTAAGGTGCAGAGGCCCTGCTCTCTGTCACCCTGGCTAAGCCCAGTGCAGGGGTTCTGAGGGCTG
GACTCCCAGGGTCCGATGGGAAAGTGTAGCCTGCAGGCCACACCTCCCCTGTGAATCACGCCT
GGCGGGACAAGAAAGCCCAAAACACTCCAAACAATGAGTTTCCAGTAAAATATGACAGACATGATGA
GGCGGATGAGAGGAGGGACCTGGCTGGGAGTTGGCGCTAGCCTGTGGGTGATGAAAGCCAAGGG
GAATGGAAAGTGCCAGACCCGCCCTACCCACGAGTATAAAGCACTCGCATCCCTTTCCAATTTAC
CCGAGCACCTTCTTCACTCAGCCAACTGCTCGCTCGCTCACCTCCCTCCTCTGCACCNNNNNNNN
NNNNNNNNNNNNNNNNATGTCCAATTTACTGACCCATACACCAAAATTTGCCTGCATTACCGGTGAT
GCAACGAGTGAATGAGGTTGCGAAGAACCTGATGGACATGTTCAAGGATCGCCAGGCGTTTTCTGAG
CATACCTGGAAATGCTTCTGCTCCGTTTGGCGTCTGGCGCATGGTGCAAGTTGAATAACCGG
AAATGGTTTTCCCGCAGAACCTGAAGATGTTGCGGATTATCTTCTATATCTTCAGGCGCGCGGTCTGG
CAGTAAAAACTATCCAGCAACATTTGGGCCAGCTAAACATGCTTCATCGTCCGGTCCGGGCTGCCAG
ACCAAGTGACAGCAATGCTGTTTCACTGGTTATGCGGCGGATCCGAAAAGAAAACGTTGATGCCGGT
GAACGTGCAAAACAGGCTCTAGCGTTCGAACGCACTGATTTGACCAGGTTTCGTTCACTCATGGAAA
ATAGCGATCGCTGCCAGGATATACGTAATCTGGCATTCTGGGGATTGCTTATAACACCCTGTTACGT
ATAGCCGAAATTGCCAGGATCAGGGTTAAAGATATCTCACGTAAGTGGGAGGATGTTAATCC
ATATTGGCAGAACGAAAACGCTGGTTAGCACCGCAGGTGTAGAGAAGGCACTTAGCCTGGGGGTAA
CTAAACTGGTGCAGCGATGGATTTCCGTCTCTGGTGTAGCTGATGATCCGAATAACTACCTGTTTTG
CCGGGTGAGAAAAAATGGTGTGGCGGCCATCTGCCACCAGCCAGCTATCAACTCGCGCCCTGGA
AGGGATTTTTGAAGCAACTCATCGATTGATTTACGGCGCTAAGGATGACTCTGGTCAGAGATACCTG
GCCTGGTCTGGACACAGTGCCCGTGTGCGAGCCGCGCGAGATATGGCCCGCGCTGGAGTTTCAAT
ACCGGAGATCATGCAAGCTGGTGGCTGGACCAATGTAATATTGTCATGAACTATATCCGTAACCTG
GATAGTGAACAGGGGCAATGGTGCCTGCTGGAAGATGGCGATTAGNNNNNNNNNNNNNNNCTGT
GCCTTCTAGTTGCCAGCCATCTGTTGTTTGGCCCTCCCCCGTGCCTTCTTACCCTGGAAGGTGCC
ACTCCCACTGTCTTTCTAATAAAATGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTCATTCTAT
TCTGGGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCT
GGGGATGCGGTGGGCTCTATGGNNNNNNNNNNNNNNNNNNATAGTACTGGATATGTTGTGTTTTACA
GTATTATGTAGTCTGTTTTTTATGCAAAATCTAATTTAATATATTGATATTTATATCATTTTACGTTTCTC

G TTCAGCTTTCTTGTACAAAGTGGTGATCGATTGACAGATCACTGAAATGTGTGGCGTGGCTTAA
GGGTGGGAAAGAATATATAAGGTGGGGTCTTATGTAGTTTTGTATCTGTTTTGCAGCAGCCGCCG
CGCCATGAGCACCACCTCGTTTGATGGAAGCATTGTGAGCTCATATTTGACAACGCGCATGCCCCCA
TGGGCCGGGGTGCCTCAGAATGTGATGGGCTCCAGCATTGATGGTCGCCCCGTCTGCCCGCAA
CTCTACTACCTTGACCTACGAGACCGTGTCTGGAACGCCGTTGGAGACTGCAGCCTCCGCCGCCG
TTCAGCCGCTGCAGCCACCGCCCGCGGATTGTGACTGACTTTGCTTTCTGAGCCCGCTTGCAAG
CAGTGCAGCTTCCCCTTCATCCGCCCGCGATGACAAGTTGACGGCTCTTTTGGACAATTGGATTCT
TTGACCCGGGAACCTAATGTGCTTTCTCAGCAGCTGTTGGATCTGCGCCAGCAGGTTTCTGCCCTGA
AGGCTTCCCTCCCCTCCAATGCGGTTTAAAACATAAATAAAAAACCAGACTCTGTTTGGATTTGGATC
AAGCAAGTGTCTTGCTGTCTTTATTTAGGGGTTTTGCGCGCGCGGTAGGCCCGGGACCAGCGGTCT
CGGTGCTTGAGGGTCTGTGATTTTTTCCAGGACGTGGTAAAGGTGACTCTGGATGTTTCAGATA
TGGGCATAAGCCCGTCTCTGGGGTGGAGGTAGCACCAGTGCAGAGCTTCATGCTGCGGGGTGGTG
TTGTAGATGATCCAGTCGTAGCAGGAGCGCTGGGCGTGGTGCCTAAAAATGTCTTTTTCAGTAGCAAGC
TGATTGCCAGGGCAGGCCCTTGGTGAAGTGTTTACAAAGCGGTTAAGCTGGGATGGGTGCATAC
GTGGGGATAGATGATGCATCTTGACTGTATTTTTAGTGGCTATGTTCCAGCCATATCCCTCCG
GGATTTCATGTTGTGCAGAACCACCAGCACAGTGTATCCGGTGCACCTTGGGAAATTTGTCATGTAGC
TTAGAAGGAAATGCGTGGAAGAACTTGGAGACGCCCTTGTGACCTCCAAGATTTTCCATGCATTCGT
CCATAATGATGGCAATGGGCCACGGGCGCGCCCTGGGCGAAGATATTTCTGGGATCACTAACGT
CATAGTTGTGTTCCAGGATGAGATCGTCATAGGCCATTTTTACAAAGCGCGGGCGGAGGGTGCCAG
ACTGCGGTATAATGGTTCCATCCGGCCAGGGGCGTAGTTACCCTCACAGATTTGCATTTCCACGC
TTTGAGTTCAGATGGGGGGATCATGTCTACCTGCGGGGCGATGAAGAAAACGGTTTCCGGGGTAGG
GGAGATCAGCTGGGAAGAAAGCAGGTTCTGAGCAGCTGCGACTTACCAGCAGCCGGTGGGCCCGT
AAATCACACCTATTACCGGGTGCACCTGGTAGTTAAGAGAGCTGCAGCTGCCGTATCCCTGAGCAG
GGGGGCCACTTCGTTAAGCATGTCCCTGACTCGCATGTTTTCCCTGACCAATCCGCCAGAAGGCG
CTCGCCGCCAGCGATAGCAGTTCTTGAAGGAAGCAAAGTTTTTCAACGGTTTGAGACCGTCCGC
CGTAGGCATGCTTTTGAAGCGTTTGAACAAGCAGTTCCAGGCGGTCCACAGCTCGGTACCTGCTC
TACGGCATCTCGATCCAGCATAATCTCCTCGTTTCCGCGGGTTGGGGCGGCTTTCGCTGTACGGCAGT
AGTCGGTGTCTCGTCCAGACGGGCCAGGGTTCATGTCTTTCCACGGGCGCAGGGTCTCGTCAGCGT
AGTCTGGGTACGGTGAAGGGGTGCGCTCCGGGCTGCGCGCTGGCCAGGGTGCCTTGAGGCTG
GTCCTGCTGGTGTGAAGCGCTGCCGGTCTTCCGCTGCGCGTGGCCAGGTAGCATTGACCATG
GTGTCATAGTCCAGCCCTCCGCGGCGTGGCCCTTGGCGCGCAGCTTGCCCTTGGAGGAGGCGCC
GCACGAGGGGCAGTGCAGACTTTTGAAGGGCGTAGAGCTTGGGCGCGAGAAATACCGATTCCGGGG
AGTAGGCATCCGCGCCCGCAGGCCCGCGCAGACGGTCTCGCATTCCACGAGCCAGGTGAGCTCTGGC
CGTTCGGGGTCAAAAACCAGGTTTCCCCATGCTTTTTGATGCGTTTCTTACCTCTGGTTCCATGAG
CCGGTGTCCACGCTCGGTGACGAAAAGGCTGTCCGTGTCCCGTATACAGACTTGAGAGGCCTGTC
CTCGAGCGGTGTTCCGCGGTCTCCTCGTATAGAACTCGGACCACTCTGAGACAAAGGCTCGCGT
CCAGGCCAGCACGAAGGAGGCTAAGTGGGAGGGGTAGCGGTGCTTGTCCACTAGGGGGTCCACT
GCTCCAGGGTGTGAAGACACATGTCGCCCTTTCGGCATCAAGGAAGGTGATTGGTTTGTAGGTGT
AGGCCAGGTGACCGGGTTCCTGAAGGGGGCTATAAAAGGGGGTGGGGCGCGTTCCTCCTCA
CTCTCTCCGCATCGTGTCTGCGAGGGCCAGCTGTTGGGGTGAAGTACTCCCTGAAAAGCGGGC
ATGACTTCTGCGCTAAGATTGTGAGTTTTCAAAAACGAGGAGGATTTGATATTCACCTGCCCCGCG
TGATGCCTTTGAGGGTGGCCGCATCCATCTGGTCAGAAAAGACAATCTTTTTGTTGTCAAGCTTGGT
GGCAAACGACCCGTAGAGGGCGTTGGACAGCAACTTGGCGATGGAGCGCAGGGTTTGGTTTTTGT
GCGATCGGCGCGCTCCTTGGCCGCGATGTTTAGCTGCACGTATTGCGCGCAACGCACCGCCATT
GGGAAAGACGGTGGTGCCTCGTCCGGCACCAGGTGCACGCGCCAACCGCGGTTGTGCAGGGTG
ACAAGGTCAACGCTGGTGGCTACCTCTCCGCGTAGGGCGCTCGTTGGTCCAGCAGAGGGCGGCCG
CTTGGCGGAGCAGAATGGCGGTAGGGGGTCTAGCTGCGTCTCGTCCGGGGGGTCTGCGTCCACGG
TAAAGACCCCGGGCAGCAGGCGCGCTCGAAGTAGTCTATCTTGCATCCTTGAAGTCTAGCGCCT
GCTGCCATGCGCGGGCGGCAAGCGCGCGCTCGTATGGGTTGAGTGGGGGACCCCATGGCATGGG
GTGGGTGAGCGCGGAGGCGTACATGCCGCAATGTCGTAAACGTAGAGGGGCTCTCTGAGTATTCC
AAGATATGTAGGGTAGCATCTTCCACCGCGGATGCTGGCGCGCACGTAATCGTATAGTTCGTGCGA
GGGAGCGAGGAGGTCCGGACCGAGGTTGCTACGGGCGGGCTGCTCTGCTCGGAAGACTATCTGCC
TGAAGATGGCATGTGAGTTGGATGATATGGTTGGACGCTGGAAGACGTTGAAGCTGGCGTCTGTGA
GACCTACCGCGTACGCACGAAGGAGGCGTAGGAGTCCGCGCAGCTTGTGACCAGCTCGGGCGGTG
ACCTGCACGTCTAGGGCGCAGTAGTCCAGGGTTTCTTGTGATGATGTCATACTTATCCTGTCCCTTTT
TTTCCACAGCTCGCGGTTGAGGACAACTCTTCCGCGGCTTTTCCAGTACTCTTGGATCGGAAACCCG
TCGGCCTCCGAACGGTAAGAGCCTAGCATGTAGAAGTGGTTGACGGCCTGGTAGGCGCAGCATCCC
TTTTCTACGGGTAGCGCGTATGCCTGCGCGGCTTCCGGAGCGAGGTGTGGGTGAGCGCAAAGGT

GTCCTGACCATGACTTTGAGGTAAGTATTTGAAGTCAGTGTCTCGCATCCGCCCTGCTCCCAG
AGCAAAAAGTCCGTGCGCTTTTTGGAACGCGGATTTGGCAGGGCGAAGGTGACATCGTTGAAGAGT
ATCTTTCCCGCGCGAGGCATAAAGTTGCGTGTGATGCGGAAGGGTCCCGGCACCTCGGAACGGTTG
TTAATTACCTGGGCGGCGAGCACGATCTCGTCAAAGCCGTTGATGTTGTGGCCACAATGTAAAGTT
CCAAGAAGCGCGGGATGCCCTTGATGGAAGGCAATTTTTTAAGTTCTCGTAGGTGAGCTCTCAGG
GGAGCTGAGCCCCTGCTCTGAAAGGGCCCAGTCTGCAAGATGAGGGTTGGAAGCGACGAATGAGC
TCCACAGGTCACGGGCCATTAGCATTTGCAGGTGGTCGCGAAAGGTCTAAACTGGCGACCTATGG
CCATTTTTCTGGGGTGATGCAGTAGAAGGTAAGCGGGTCTTGTCCAGCGGTCCCATCCAAGGTT
CGCGGCTAGGTCTCGCGCGGCAGTCACTAGAGGCTCATCTCCGCCGAACCTTCATGACCAGCATGAA
GGCACGAGCTGCTTCCCAAAGGCCCCCATCCAAGTATAGGTCTCTACATCGTAGGTGACAAAGAG
ACGCTCGGTGCGAGGATGCGAGCCGATCGGGAAGAACTGGATCTCCCGCCACCAATTGGAGGAGT
GGCTATTGATGTGGTAAAAGTAGAAGTCCCTGCGACGGGCCGAACACTCGTGTGGCTTTTGTAAAA
ACGTGCGCAGTACTGGCAGCGGTGCACGGGCTGTACATCCTGCACGAGGTTGACCTGACGACCGC
GCACAAGGAAGCAGAGTGGGAATTTGAGCCCCTCGCCTGGCGGGTTGGCTGGTGGTCTTCTACTT
CGGCTGCTTGTCTTGACCGTCTGGCTGCTCGAGGGGAGTTACGGTGGATCGGACCACCACCGCG
CGCAGCCCCAAAGTCCAGATGTCCGCGCGCGGGTTCGGAGCTTGTGACAACATCGCGCAGATG
GGAGCTGTCCATGGTCTGGAGCTCCCGCGCGTTCAGGTCAGGCGGGAGCTCTGCAGGTTTACCT
CGCATAGACGGGTCAGGGCGCGGGCTAGATCCAGGTGATACCTAATTTCCAGGGGCTGGTTGGTG
GCGGCGTTCATGGCTTGCAAGAGGCCGCATCCCGCGCGCGACTACGGTACCGCGCGGGCGGGC
GGTGGGCCGCGGGGGTGTCTTGGATGATGCATCTAAAAGCGGTGACGCGGGCGAGCCCCCGGA
GGTAGGGGGGGCTCCGGACCCGCGGGGAGAGGGGGCAGGGGCACGTCCGGCGCCGCGCGCGGGC
AGGAGCTGGTGTGCGCGCGTAGGTTGCTGGCGAACGCGACGACGCGGGCGTTGATCTCCTGAAT
CTGGCGCCTCTGCGTGAAGACGACGGGCCCGGTGAGCTTGAAGAGAGTTGACAGAAAT
CAATTTCCGTGTCGTTGACGGCGGCCTGGCGCAAATCTCCTGCACGTCTCCTGAGTTGTCTTGATA
GGCGATCTCGGCCATGAACTGCTCGATCTTCTCCTGGAGATCTCCGCGTCCGGCTCGCTCCAC
GGTGGCGGGGAGGTCGTTGAAAATGCGGGCCATGAGCTGCGAGAAGGCGTTGAGGCCTCCCTCGT
TCCAGACGCGGCTGTAGACCACGCCCCCTTCGGCATCGCGGGCGCGCATGACCACCTGCGCGAGA
TTGAGCTCCACGTGCCGGGCGAAGACGGCGTAGTTTTGCGAGGCGCTGAAAGAGGTAGTTGAGGGT
GGTGGCGGTGTGTTCTGCCACGAAGAAGTACATAACCCAGCGTCCGAACGTGGATTCCGTTGATATC
CCCCAAGGCCTCAAGGCGCTCCATGGCCTCGTAGAAGTCCACGGCGAAGTTGAAAAGTGGGAGTT
GCGCGCCGACACGGTTAACTCCTCCTCCAGAAGACGGATGAGCTCGGCGACAGTGTGCGGCACCT
CGCGCTCAAAGGCTACAGGGGCCTCTTCTTCTTCAATCTCCTCTTCCATAAGGGCCTCCCCTTC
TTCTTCTTGGCGGCGGTGGGGGAGGGGGGACACGGCGGCGACGACGGCGCACCCGGGAGGCGG
TCGACAAAGCGCTCGATCATCTCCCGCGGCGACGGCGCATGGTCTCGGTGACGGCGCGGCCGTT
CTCGCGGGGGCGCAGTTGGAAGACGCCGCCGTCATGTCCCGGTTATGGGTTGGCGGGGGGCTG
CCATGCGGCAGGGATACGGCGCTAACGATGCATCTCAACAATTGTTGTGTAGGTACTCCGCCGCCG
AGGGACCTGAGCGAGTCCGCATCGACCGGATCGGAAAACCTCTCGAGAAAGGCGTCTAACCAAGTCA
CAGTCGCAAGGTAGGCTGAGCACCGTGGCGGGCGGACGCGGGCGGGTCCGGGTTGTTTCTAGG
CGGAGGTGCTGCTGATGTAATTAAGTAGGCGGTCTTGAGACGGCGGATGGTCCGACAGAAAGCA
CCATGTCTTGGGTCCGGCTGCTAAATGCGCAGGCGGTTCGGCCATGCCCAAGGCTCGATTTTTGAC
ATCGGGCAGGTCTTTGTAGTAGTCTTGCATGAGCCTTTCTACCGGCACTTCTTCTTCTCCTTCT
TGTCTGCATCTTGCATCTATCGCTGCGGCGGCGGCGGAGTTTGGCCGTAGGTGGCGCCCTCTT
CCTCCCATGCGTGTGACCCGAAGCCCCTCATCGGCTGAAGCAGGGCTAGGTCCGGCGACAACGCG
CTCGGCTAATATGGCCTGCTGCACCTGCGTGAGGGTAGACTGGAAGTCATCCATGTCCACAAAGCG
GTGGTATGCGCCCGTGTGATGGTGTAAAGTGCAGTTGGCCATAACGGACCAGTTAACGGTCTGGTG
ACCCGGCTGCGAGAGCTCGGTGTACCTGAGACGCGAGTAAGCCCTCGAGTCAAATACGTAGTCGTT
GCAAGTCCGCACCAGGTAAGTATCCACCAAAAAGTGCGGCGGGCGGCTGGCGGTAGAGGGGGC
AGCGTAGGGTGGCCGGGGCTCCGGGGGCGAGATCTTCCAACATAAGGCGATGATATCCGTAGATG
TACCTGGACATCCAGGTGATGCCGGCGGCGGTGGTGGAGGCGCGCGGAAAGTCCGCGACGCGGT
TCCAGATGTTGCGCAGCGGCAAAAAGTGTCCATGGTCCGGACGCTCTGGCCGGTCCAGGCGCGCG
CAATCGTTGACGCTCTAGACCGTGCAAAAGGAGAGCCTGTAAGCGGGCACTTCCGTTGGTCTGGT
GGATAAATTCGCAAGGGTATCATGGCGGACGACCGGGGTTTCGAGCCCCGTATCCGGCCGTCCGCC
GTGATCCATGCGGTTACCGCCCGCGTGTGCAACCCAGGTGTGCGACGTGAGACAACGGGGGAGTG
CTCCTTTTGGCTTCTTCCAGGCGCGGGGCTGCTGCGCTAGCTTTTTTGGCCACTGGCCGCGCGC
AGCGTAAGCGGTTAGGCTGGAAGCGAAAGCATTAAAGTGGCTCGCTCCCTGTAGCCGGAGGGTTAT
TTTCCAAGGGTTGAGTCGCGGGACCCCGGTTTCGAGTCTCGGACCGGCGGACTGCGGCGAACGG
GGTTTTGCCTCCCGTTCATGCAAGACCCCGCTTGCAAAATCCTCCGAAACAGGGACGAGCCCTT
TTTTGCTTTTCCAGATGCATCCGGTGTGCGGCAGATGCGCCCCCTCCTCAGCAGCGGCAAGAG

CAAGAGCAGCGGCAGACATGCAGGGCACCCCTCCCCTCCTCCTACCGCGTCAGGAGGGGGCGACATC
CGCGGTTGACGCGGCAGCAGATGGTATTACGAACCCCCGCGGCGCCGGGGCCCGGCACTACCTG
GACTTGGAGGAGGGCGAGGGCCTGGCGCGGCTAGGAGCGCCCTCTCCTGAGCGGTACCCAAGGG
TGCAGCTGAAGCGTGATACGCGTGAGGCGTACGTGCCGCGGCAGAACCTGTTTCGCGACCGCGAG
GGAGAGGAGCCCGAGGAGATGCGGGATCGAAAGTTCCACGCAGGGCGCGAGCTGCGGCATGGCC
TGAATCGCGAGCGGTTGCTGCGCGAGGAGGACTTTGAGCCCCGACGCGCGAACCGGGATTAGTCCC
GCGCGCGCACACGTGGCGGCCGCGGACCTGGTAACCGCATACGAGCAGACGGTGAACCAGGAGAT
TAACTTTCAAAAAGCTTTAACAACCACGTGCGTACGCTTGTGGCGCGCGAGGAGGTGGCTATAGGA
CTGATGCATCTGTGGGACTTTGTAAGCGCGCTGGAGCAAAACCCAAATAGCAAGCCGCTCATGGCG
CAGCTGTTCCCTTATAGTGCAGCACAGCAGGGACAACGAGGCATTACGGGATGCGCTGCTAAACATA
GTAGAGCCCGAGGGCCGCTGGCTGCTCGATTTGATAAACATCCTGCAGAGCATAAGTGGTGCAGGAG
CGCAGCTTGAGCCTGGCTGACAAGGTGGCCGCCATCAACTATTCCATGCTTAGCCTGGGCAAGTTTT
ACGCCCCGAAGATATACCATACCCTTACGTTCCCATAGACAAGGAGGTAAAGATCGAGGGGTTCTA
CATGCGCATGGCGCTGAAGGTGCTTACCTTGAGCGACGACCTGGGCGTTTATCGCAACGAGCGCAT
CCACAAGGCCGTGAGCGTGAGCCGGCGCGGAGCTCAGCGACCGCGAGCTGATGCACAGCCTG
CAAAGGGCCCTGGCTGGCACGGGCAGCGGCGATAGAGAGGCCGAGTCCCTACTTTGACGCGGGCG
CTGACCTGCGCTGGGCCCAAGCCGACGCGCCCTGGAGGCAGCTGGGGCCGACCTGGGCTGGC
GGTGGCACCCGCGCGCGCTGGCAACGTGCGCGGCGTGGAGGAATATGACGAGGACGATGAGTAC
GAGCCAGAGGACGGCGAGTACTAAGCGGTGATGTTTCTGATCAGATGATGCAAGACGCAACGGACC
CGGCGGTGCGGGCGGCGCTGCAGAGCCAGCCGTCCGGCCTTAACTCCACGGACGACTGGCGCCA
GGTCATGGACCGCATCATGTCGCTGACTGCGCGCAATCCTGACGCGTTCGGCAGCAGCCGCGAGG
CCAACCGGCTCTCCGCAATTCTGGAAGCGGTGGTCCCGGCGCGCGCAAACCCACGCACGAGAAG
GTGCTGGCGATCGTAAACGCGCTGGCCGAAAACAGGGCCATCCGGCCCGACGAGGCCGCGCCTGGT
CTACGACGCGCTGCTTACGCGCGTGGCTCGTTACAACAGCGGCAACGTGCAGACCAACCTGGACC
GGCTGGTGGGGGATGTGCGCGAGGCCGTGGCGCAGCGTGAGCGCGCGCAGCAGGGAACCT
GGGCTCCATGGTTGACTAAACGCCTTCTGAGTACACAGCCCGCCAACGTGCCGCGGGGACAGG
AGGACTACACCAACTTTGTGAGCGCACTGCGGCTAATGGTACTGAGACACCGCAAAGTGAGGTGT
ACCAGTCTGGGCCAGACTATTTTTTCCAGACCAGTAGACAAGGCCTGCAGACCCTAAACCTGAGCCA
GGCTTTCAAAAACCTTGAGGGGCTGTGGGGGGTGCGGGCTCCACAGGGCAGCCGCGGACCGTGT
CTAGCTTGCTGACGCCCAACTCGCGCCTGTTGCTGCTGCTAATAGCGCCCTTACGGACAGTGGA
GCGTGTCCCGGGACACATACCTAGGTCACTTGCTGACACTGTACCGCGAGGCCATAGGTCAGGCGC
ATGTGGACGAGCATACTTTCCAGGAGATTACAAGTGTGAGCCGCGCGCTGGGGCAGGAGGACACG
GGCAGCCTGGAGGCAACCCTAAACTACCTGCTGACCAACCGGCGGCAGAAAGATCCCCTCGTTGCAC
AGTTTAAACAGCGAGGAGGAGCGCATTTTGGCTACGTGCAGCAGAGCGTGAGCCTAACCTGATG
CGCGACGGGGTAACGCCAGCGTGGCGCTGGACATGACCGCGCGCAACATGGAACCGGGCATGTA
TGCCTCAAACCGGCCGTTTATCAACCGCCTAATGGACTACTTGCATCGCGCGGCCGCGCGTGAACCC
CGAGTATTTACCAATGCCATCTTGAACCCGCACTGGCTACCGCCCCCTGGTTTCTACACCGGGGG
ATTCGAGGTGCCCCGAGGGTAACGATGGATTCTCTGGGACGACATAGACGACAGCGTGTTTTCCCC
GCAACCCGACACCCCTGCTAGAGTTGCAACAGCGCGAGCAGGCGCGCTGCGAAAGGAAA
GCTTCCGCGAGGCCAAGCAGCTTGTCCGATCTAGGCGCTGCGGCCCCCGCGGTGAGTGTAGTAG
CCATTTCCAAGCTTGATAGGGTCTCTTACCAGACTCGCACACCACCCGCCGCGCTGCTGGGCGAG
GAGGAGTACCTAAACAACCTCGCTGCTGCAGCCGACGCGGAAAAAACCTGCCTCCGGCATTTC
AACACGGGATAGAGAGCCTAGTGGACAAGATGAGTAGATGGAAGACGTACGCGCAGGAGCACAG
GGACGTGCCAGGCCCGCGCCCGCCACCCGTCGTCAAAGGCACGACCGTCAGCGGGGTCTGGTG
TGGGAGGACGATGACTCGGCAGACGACAGCAGCGTCTGGATTTGGGAGGGAGTGGAACCCGTT
TGCGCACCTTCGCCCCAGGCTGGGGAGAATGTTTTAAAAAAGCATGATGCAAAATAAAAA
CTCACCAAGGCCATGGCACCGAGCGTTGGTTTTCTTGTATTCCCCTTAGTATGCGGCGCGCGGCGA
TGTATGAGGAAGGTCCTCCTCCTACGAGAGTGTGGTGGAGCGCGGCCAGTGGCGGCGGCG
CTGGGTTCTCCCTTCGATGCTCCCTGGACCCGCCGTTTGTGCTCCGCGGTACCTGCGGCCTACC
GGGGGGAGAAACAGCATCCGTTACTCTGAGTTGGCACCCCTATTGACACCACCCGTGTGTACCTG
GTGGACAACAAGTCAACGGATGTGGCATCCCTGAACCTACCAGAACGACCACAGCAACTTTCTGACCA
CGGTCAATCAAAAACATGACTACAGCCCGGGGAGGCAAGCACACAGACCATCAATCTTGACGACC
GGTCGCACTGGGGCGGCGACCTGAAAACCATCCTGCATACCAACATGCCAAATGTGAACGAGTTCA
TGTTTACCAATAAGTTTAAAGGCGCGGGTGTGGTGTGCGGCTTGCTACTAAGGACAATCAGGTGGA
GCTGAAATACGAGTGGGTGGAGTTCACGCTGCCCGAGGGCAACTACTCCGAGACCATGACCATAGA
CCTTATGAACAACGCGATCGTGGAGCACTACTTGAAAGTGGGCAGACAGAACGGGGTTCTGGAAAG
CGACATCGGGGTAAAGTTTACACCCGCAACTTCAGACTGGGGTTTACCCCGTCACTGGTCTTGT
ATGCCTGGGGTATATACAAACGAAGCCTTCCATCCAGACATCATTTTGTGCCAGGATGCGGGGTGG

ACTTCACCCACAGCCGCCTGAGCAACTTGTGGGCATCCGCAAGCGGCAACCCTTCCAGGAGGGCT
TTAGGATCACCTACGATGATCTGGAGGGTGGTAACATTCCCGCACTGTTGGATGTGGACGCCTACCA
GGCGAGCTTGAAGATGACACCGAACAGGGCGGGGGTGGCGCAGGCGGCAGCAACAGCAGTGGC
AGCGGGCGCGGAAGAGAACTCCAACGCGGCAGCCGCGGCAATGCAGCCGGTGGAGGACATGAACG
ATCATGCCATTCGCGGCGACACCTTTGCCACACGGGCTGAGGAGAAGCGCGCTGAGGCCGAAGCA
GCGGCCGAAGCTGCCGCCCCCGCTGCGCAACCCGAGGTGAGAGAAGCCTCAGAAGAAACCGGTGAT
CAAACCCCTGACAGAGGACAGCAAGAAACGCAGTTACAACCTAATAAGCAATGACAGCACCTTACC
CAGTACCGCAGCTGGTACCTTGCATACAACCTACGGCGACCCTCAGACCGGAATCCGCTCATGGACC
CTGCTTTGCACTCCTGACGTAACCTGCGGCTCGGAGCAGGTCTACTGGTCGTTGCCAGACATGATG
CAAGACCCCGTGACCTTCCGCTCCACGCGCCAGATCAGCAACTTTCCGGTGGTGGGCGCCGAGCT
GTTGCCCGTGCACTCCAAGAGCTTCTACAACGACCAGGCCGTCTACTCCCAACTCATCCGCCAGTTT
ACCTCTTGACCCACGTGTTCAATCGCTTTCCGAGAACCAGATTTTGGCGCGCCCGCCAGCCCC
ACCATCACCACCGTCAGTGAACGTTTCTGCTCTCACAGATCACGGGACGCTACCGCTGCGCAAC
AGCATCGGAGGATCCAGCGAGTGACCATTACTGACGCCAGACGCCGCACCTGCCCTACGTTTAC
AAGGCCCTGGGCATAGTCTCGCCGCGCTCCTATCGAGCCGCACTTTTTGAGCAAGCATGTCCATG
CTTATATCGCCAGCAATAACACAGGCTGGGGCTGCGCTTCCCAAGCAAGATGTTTGGCGGGGCC
AAGAAGCGCTCCGACCAACCCAGTGCAGCGTGCAGCGGCACTACCGCGCCCTGGGGCGCGC
ACAAACGCGGCCGCACTGGGCGCACCAACCGTCGATGACGCCATCGACGCGGTGGTGGAGGAGGC
GCGCAACTACGCCCACGCCGCCACCAGTGTCCACAGTGGACGCGGCCATTAGACCCGTGGTGC
GCGGAGCCCGCGCTATGCTAAAATGAAGAGACGGCGGAGGCGCGTAGCACGTCGCCACCGCCG
CCGACCCGGCACTGCCGCCAACGCGCGGGCGGGCCCTGCTTAACCGCGCACGTGCGACCGGC
CGACGGGCGGCCATGCGGGCCGCTCGAAGGCTGGCCGCGGGTATTGTCAGTGTCCCCCAGGT
CCAGGCGACGAGCGGCCGCCGAGCAGCCGCGGCCATTAGTGTATGACTCAGGGTGCAGGGG
CAACGTGTATTGGGTGCGCGACTCGGTTAGCGGCCTGCGCGTGCCCGTGCACCCGCCCCCGC
GCAACTAGATTGCAAGAAAAACTACTTAGACTCGTACTGTTGTATGTATCCAGCGGCGGCGGCGC
CAACGAAGCTATGTCCAAGCGCAAATCAAAGAAGAGATGCTCCAGGTCATCGCGCCGAGATCTAT
GGCCCCCGAAGAAGGAAGAGCAGGATTACAAGCCCCGAAAGCTAAAGCGGGTCAAAAAGAAAAAG
AAAGATGATGATGATGAACTTGACGACGAGGTGGAAGTGTGCACGCTACCGCGCCAGGCGACGG
GTACAGTGGAAAGTCCGACGCGTAAAACGTGTTTTGCGACCCGGCACCCCGTAGTCTTACGCC
GGTGAGCGCTCCACCCGCACCTACAAGCGCGTGTATGATGAGGTGTACGGCGACGAGGACCTGCT
TGAGCAGGCCAACGAGCGCCTCGGGGAGTTTGCCTACGGAAAGCGGCATAAGGACATGCTGGCGT
TGCCGCTGGACGAGGGCAACCCAACACCTAGCCTAAAGCCCCTAACACTGCAGCAGGTGCTGCC
GCGCTTGACCCGTCCGAAGAAAAGCGCGGCCTAAAGCGCGAGTCTGGTACTTGGCACCCACCGT
GCAGCTGATGGTACCCAAGCGCCAGCGACTGGAAGATGTCTTGGAAAAATGACCGTGGAACTGG
GCTGGAGCCCGAGGTCCGCGTGCGGCCAATCAAGCAGGTGGCGCCGGGACTGGGCGTGCAGACC
GTGGACGTTACAGATACCCACTACAGTAGCACCAGTATTGCCACCGCCACAGAGGGCATGGAGACA
CAAACGTCCCCGTTGCCTCAGCGGTGGCGGATGCCGCGGTGCAGGCGGTGCTGCGGCCGCGT
CCAAGACCTCTACGGAGGTGCAAACGGACCCGTGGATGTTTCGCGTTTCAGCCCCCGGCGCCCG
CGCGGTTCCAGGAAGTACGGCGCCGCGCAGCGCTACTGCCGAATATGCCCTACACTCCTTCCATT
GCGCTACCCCGCTATCGTGGCTACACCTACCCGCCAGAACAGACGAGCAACTACCCGACCCG
AACCACCACTGGAACCTGCGCCGCCGCTCGCCGTCGCCAGCCCGTGTGGCCCCGATTTCCGTGC
GCAGGGTGGCTCGCGAAGGAGGCAGGACCCTGGTGTGCCAACAGCGCGCTACCACCCAGCATC
GTTTAAAAGCCGGTCTTTGTGGTTCTTGCAGATATGGCCCTCACCTGCCGCTCCGTTTTCCGGTGC
CGGGATTCCGAGGAAGAATGCACCGTAGGAGGGGCATGGCCGGCCACGGCCTGACGGGCGGCAT
GCGTGTGCGCACCAACCGGCGGCGCGCGTGCACCGTGCATGCGCGGCGGTATCCTGCC
CTCCTTATTCCACTGATCGCCGCGGCGATTGGCGCCGTGCCCGGAATTGCATCCGTGGCCTTGCAG
GCGCAGAGACTGATTAAAAACAAGTTGCATGTGGAAAAATCAAATAAAAAGTCTGGACTCTCAC
GCTCGCTTGGTCTGTAACCTATTTTGTAGAATGGAAGACATCAACTTTGCGTCTTGGCCCCGCGAC
ACGGCTCGCGCCCGTTCATGGGAACTGGCAAGATATCGGCACCAGCAATATGAGCGGTGGCGCCT
TCAGCTGGGGCTCGCTGTGGAGCGGCATTAATAATTTTCGTTCCACCGTTAAGAAGTATGGCAGCAA
GGCCTGGAACAGCAGCACAGGCCAGATGCTGAGGGATAAGTTGAAAGAGCAAAATTTCCAACAAAA
GGTGGTAGATGGCCTGGCCTCTGGCATTAGCGGGGTGGTGGACCTGGCCAACCAGGCAGTGCAAA
ATAAGATTAACAGTAAGCTTGATCCCCGCCCTCCCGTAGAGGAGCCTCCACCGGCCGTGGAGACAG
TGTCTCCAGAGGGGCGTGGCGAAAAGCGTCCGCGCCCCGACAGGGAAGAACTCTGGTGACGCAA
ATAGACGAGCCTCCCTCGTACGAGGAGGCACTAAAGCAAGGCCTGCCACCACCCGTCCCATCGCG
CCCATGGCTACCGGAGTGTGGGCCAGCACACCCGTAACGCTGGACCTGCCTCCCCCGCCGA
CACCCAGCAGAAACCTGTGCTGCCAGGCCGACCGCGTGTGTGTAACCCGTCTAGCCGCGCGTC
CCTGCGCCGCGCCGCCAGCGGTCCGCGATCGTTGCGGGCCCGTAGCCAGTGGCAACTGGCAAGCA

CACTGAACAGCATCGTGGGTCTGGGGGTGCAATCCCTGAAGCGCCGACGATGCTTCTGAATAGCTA
ACGTGTCGTATGTGTGTCATGTATGCGTCCATGTGCGCCGCCAGAGGAGCTGCTGAGCCGCCGCGCG
CCCGCTTTCCAAGATGGCTACCCCTTCGATGATGCCGCAGTGGTCTTACATGCACATCTCGGGCCA
GGACGCCTCGGAGTACCTGAGCCCCGGGCTGGTGCAGTTTGGCCGCGCCACCGAGACGTACTTCA
GCCTGAATAACAAGTTTAGAAACCCACGGTGGCGCCTACGCACGACGTGACCACAGACCGGTCCC
AGCGTTTGACGCTGCGGTTTCATCCCTGTGGACCGTGAGGATACTGCGTACTCGTACAAGGCGCGGT
TCACCCTAGCTGTGGGTGATAACCGTGTGCTGGACATGGCTTCCACGTACTTTGACATCCGCGGCG
TGCTGGACAGGGGCCCTACTTTTAAGCCCTACTCTGGCACTGCCTACAACGCCCTGGCTCCCAAGG
GTGCCCCAAATCCTTGCGAATGGGATGAAGCTGCTACTGCTCTTCAAATAAACCTAGAAGAAGAGGA
CGATGACAACGAAGACGAAGTAGACGAGCAAGCTGAGCAGCAAAAACTCACGTATTTGGGCAGGC
GCCTTATTCTGGTATAAATATTACAAAGGAGGGTATTCAAATAGGTGTGCAAGGTCAAACACCTAAAT
ATGCCGATAAAACATTTCAACCTGAACCTCAAATAGGAGAATCTCAGTGGTACGAACTGAAATTAAT
CATGCAGCTGGGAGAGTCCTTAAAAGACTACCCCAATGAAACCATGTTACGGTTCATATGCAAAAC
CCACAAATGAAAATGGAGGGCAAGGCATTCTTGTAAAGCAACAAATGAAAAGCTAGAAAAGTCAAGT
GGAAATGCAATTTTTCTCAACTACTGAGGCGACCCGAGGCAATGGTGATAAECTTGACTCCTAAAGTG
GTATTGTACAGTGAAGATGTAGATATAGAAACCCAGACACTCATATTTCTTACATGCCCACTATTA
GGAAGGTAACCTACGAGAATAATGGGCCAACAACTATGCCCAACAGGCCTAATTACATTGCTTTTA
GGACAATTTTATTGGTCTAATGTATTACAACAGCACGGTAATATGGGTGTTCTGGCGGGCCAAGC
ATCGCAGTTGAATGCTGTTGTAGATTTGCAAGACAGAAACACAGAGCTTTCATACCAGCTTTTGCTTG
ATTCCATTGGTGATAGAACCAGGTAATTTCTATGTGGAATCAGGCTGTTGACAGCTATGATCCAGAT
GTTAGAATTATTGAAAATCATGGAACCTGAAGATGAACTTCCAAATTACTGCTTTCCACTGGGAGGTGT
GATTAATACAGAGACTCTTACCAAGGTAAAACCTAAAACAGGTCAGGAAAATGGATGGGAAAAAGAT
GCTACAGAATTTTCAGATAAAAATGAAATAAGAGTTGGAAATAATTTTGCCATGGAAATCAATCTAAAT
GCCAACCTGTGGAGAAATTTCTGTACTCCAACATAGCGCTGTATTTGCCGACAAGCTAAAGTACA
GTCCTTCCAACGTAAAAATTTCTGATAACCCAAACACCTACGACTACATGAACAAGCGAGTGGTGGC
TCCCGGGTTAGTGGACTGCTACATTAACCTTGGAGCACGCTGGTCCCTTGACTATATGGACAACGTC
AACCCATTTAACACCACCGCAATGCTGGCCTGCGCTACCGCTCAATGTTGCTGGGCAATGGTCGCT
ATGTGCCCTTCCACATCCAGGTGCCTCAGAAGTTCTTTGCCATTAAAACCTCCTTCTCCTGCCGGG
CTCATACACCTACGAGTGGAACCTCAGGAAGGATGTTAACATGTTTCTGCAGAGCTCCCTAGGAAAT
GACCTAAGGGTTGACGGAGCCAGCATTAAAGTTTGATAGCATTGCTTTACGCCACCTTCTTCCCA
TGGCCACAACACCGCCTCCACGCTTGAGGCCATGCTTAGAAACGACACCAACGACCAGTCTTTAA
CGACTATCTCTCCGCCGCCAACATGCTCTACCCTATACCCGCCAACGCTACCAACGTGCCCATATCC
ATCCCCTCCCGCAACTGGGCGGCTTTCCGCGGCTGGGCCCTTACGCGCCTTAAGACTAAGGAAACC
CCATCACTGGGCTCGGGCTACGACCCTTATTACACCTACTCTGGCTCTATACCCTACCTAGATGGAA
CCTTTTACCTCAACCACACCTTTAAGAAGGTGGCCATTACCTTTGACTCTTCTGTGAGCTGGCCTGGC
AATGACCGCCTGCTTACCCCAACGAGTTTGAATTAAGCGCTCAGTTGACGGGGAGGGTTACAAC
GTTGCCAGTGTAAATGACCAAAGACTGGTTCTGTGTAACAATGCTAGCTAACTACAACATTGGCT
ACCAGGGCTTCTATATCCAGAGAGCTACAAGGACCGCATGACTCCTTCTTTAGAAACTTCCAGCC
CATGAGCCCTCAGTGGTGGATGATACTAAATACAAGGACTACCAACAGGTGGGCATCCTACACCAA
CACAACTACTGGATTTGTTGGCTACTTGGCCCACTGCGCGAAGGACAGGCCTACCTGCTA
ACTTCCCCTATCCGCTTATAGGCAAGACCGCAGTTGACAGCATTACCCAGAAAAAGTTTCTTTGCGAT
CGCACCTTTGGCGCATCCATTCTCCAGTAACTTTATGTCCATGGGCGCACTCACAGACCTGGGCC
AAAACCTTCTCTACGCCAACTCCGCCCACGCGCTAGACATGACTTTTGAGGTGGATCCCATGGACGA
GCCACCCTTCTTTATGTTTTGTTTGAAGTCTTTGACGTGGTCCGTGTGCACCGGCCGACCGCGGC
GTCATCGAAACCGTGTACCTGCGCACGCCCTTCTCGGCCGGCAACGCCACAACATAAAGAAGCAAG
CAACATCAACAACAGCTGCCGCCATGGGCTCCAGTGAGCAGGAACTGAAAGCCATTGTCAAAGATCT
TGGTTGTGGGCCATATTTTTGGGCACCTATGACAAGCGCTTTCCAGGCTTTGTTTCTCCACACAAGC
TCGCCTGCGCCATAGTCAATACGGCCGGTTCGCGAGACTGGGGGCGTACACTGGATGGCCTTTGCCT
GGAACCCGCACTCAAAAACATGCTACCTCTTTGAGCCCTTTGGCTTTTCTGACCAGCGACTCAAGCA
GGTTTACCAGTTTGAGTACGAGTCACTCCTGCGCCGTAGCGCCATTGCTTCTTCCCCGACCGCTGT
ATAACGCTGAAAAGTCCACCCAAAGCGTACAGGGGCCAACTCGGCCGCTGTGGACTATTCTGC
TGCATGTTTCTCCACGCCTTTGCCAACTGGCCCCAACTCCCATGGATCACAACCCACCATGAACC
TTATTACGGGGTACCCAACCTCATGCTCAACAGTCCCCAGGTACAGCCCACCCTGCGTCGCAACC
AGGAACAGCTCTACAGCTTCTGGAGCGCCACTCGCCCTACTTCCGCAGCCACAGTGCGCAGATTA
GGAGCGCCACTTCTTTTTGCACTTGA AAAACATGTAAAAATAATGTACTAGAGACTTTTCAATAAAG
GCAAATGCTTTTATTGTACTCTCGGGTGATTATTTACCCCAACCTTGGCGTCTGCGCCGTTTAA
AAATCAAAGGGGTTCTGCCGCGCATCGCTATGCGCCACTGGCAGGGACACGTTGCGATACTGGTGT
TTAGTGCTCCACTTAAACTCAGGCACAACCATCCGCGGCAGCTCGGTGAAGTTTTCACTCCACAGGC

TGCGCACCATCACCAACGCGTTTAGCAGGTCGGGCGCCGATATCTTGAAGTCGCAGTTGGGGCCTC
CGCCCTGCGCGCGGAGTTGCGATACACAGGGTTGCAGCACTGGAACACTATCAGCGCCGGGTGG
TGCACGCTGGCCAGCACGCTCTTGTGCGAGATCAGATCCGCGTCCAGGTCCTCCGCGTTGCTCAGG
GCGAACGGAGTCAACTTTGGTAGCTGCCTTCCAAAAAGGGCGCGTGCCAGGCTTTGAGTTGCAC
TCGCACCGTAGTGCCATCAAAGGTGACCGTGCCCGGTCTGGGCGTTAGGATACAGCGCCTGCATA
AAAGCCTTGATCTGCTTAAAAGCCACCTGAGCCTTTGCGCCTCAGAGAAGAACATGCCGCAAGACT
TGCCGGAAAACCTGATTGGCCGGACAGGCCGCGTCGTGCACGCAGCACCTTGCCTCGGTGTTGGAG
ATCTGCACCACATTTCCGGCCCCACCGTTCTTACGATCTTGGCCTTGTAGACTGCTCCTTACAGCG
CGCGCTGCCCGTTTTTCGCTCGTCACATCCATTTCAATCACGTGCTCCTTATTTATCATAATGCTTCCG
TGTAGACACTTAAGCTCGCCTTCGATCTCAGCGCAGCGGTGCAGCCACAACGCGCAGCCCCTGGGG
TCGTGATGCTTGTAGGTCACCTCTGCAAACGACTGCAGGTACGCCTGCAGGAATCGCCCCATCATC
GTCACAAAGGTCTTGTGCTGGTGAAGGTCAGCTGCAACCCGCGGTGCTCCTCGTTACAGCCAGGTC
TTGCATACGGCCGCCAGAGCTTCCACTTGGTCAGGCAGTAGTTTGAAGTTCGCCTTTAGATCGTTAT
CCACGTGGTACTTGTCCATCAGCGCGCGCAGCCTCCATGCCCTTCTCCACGCAGACACGATCG
GCACACTCAGCGGTTCCATCACCGTAATTTCACTTTCCGCTTCCGCTGGGCTCTTCTCTTCTTCTGC
GTCCGCATACCACGCGCCACTGGTCTTTCATTACGCCCGCGCACTGTGCGCTTACCTCCTTTG
CCATGCTTGATTAGCACCGGTGGGTTGCTGAAACCCACCATTTGTAGCGCCACATCTTCTCTTTCTC
CTCGCTGTCCACGATTACCTCTGGTGATGGCGGGCGCTCGGGCTTGGGAGAAGGGCGCTTCTTTTT
CTTCTTGGGCGCAATGGCCAAATCCGCCGCCGAGGTCGATGGCCGCGGGCTGGGTGTGCGCGGCA
CCAGCGCGTCTTGTGATGAGTCTTCTCGTCTCGGACTCGATACGCCGCTCATCCGCTTTTTTGG
GGGCGCCCGGGGAGGCGGCGGCGACGGGGACGGGGACGACACGTCCTCCATGGTTGGGGGACG
TCGCGCCGCACCGCGTCCGCGCTCGGGGGTGGTTTTCGCGCTGCTCCTCTTCCCGACTGGCCATTT
CCTTCTCCTATAGGCAGAAAAAGATCATGGAGTCAGTCGAGAAGAAGGACAGCCTAACCGCCCCCT
CTGAGTTCGCCACCACCGCCTCCACCGATGCCGCCAACGCGCCTACCACCTTCCCGCTCGAGGCAC
CCCCGCTTGAGGAGGAGGAAGTGATTATCGAGCAGGACCCAGTTTTTGTAAAGCGAAGACGACGAGG
ACCGCTCAGTACCAACAGAGGATAAAAAGCAAGACCAGGACAACGCAGAGGCAAACGAGGAACAAG
TCGGGCGGGGGGACGAAAGGCATGGCGACTACCTAGATGTGGGAGACGACGTGCTGTTGAAGCAT
CTGCAGCGCCAGTGCGCCATTATCTGCGACGCGTTGCAAGAGCGCAGCGATGTGCCCTCGCCATA
GCGGATGTCAGCCTTGCTACGAACGCCACCTATTCTCACCGCGCGTACCCCCCAAACGCCAAGAA
AACGGCACATGCGAGCCCAACCCGCGCCTCAACTTCTACCCCGTATTTGCCGTGCCAGAGGTGCTT
GCCACCTATCACATCTTTTTCCAAAACCTGCAAGATAACCCCTATCCTGCCGTGCCAACCGCAGCCGAG
CGGACAAGCAGCTGGCCTTGCGGCAGGGCGCTGTCATACCTGATATCGCCTCGCTCAACGAAGTGC
CAAAAATCTTTGAGGGTCTTGGACGCGACGAGAAGCGCGCGGCAAACGCTCTGCAACAGGAAAACA
GCGAAAATGAAAGTCACTCTGGAGTGTGGTGGAACTCGAGGGTGACAACGCGCGCCTAGCCGTAC
TAAAACGCAGCATCGAGGTCACCCACTTTGCCTACCCGGCACTTAACCTACCCCCAAGGTCATGAG
CACAGTCATGAGTGAGCTGATCGTGCGCCGTGCGCAGCCCCTGGAGAGGGATGCAAATTTGCAAGA
ACAAACAGAGGAGGGCCTACCCGCAGTTGGCGACGAGCAGCTAGCGCGCTGGCTTCAAACGCGCG
AGCCTGCCGACTTGGAGGAGCGACGCAAATAATGATGGCCGAGTGCTCGTTACCGTGGAGCTTA
AGTGTCAGCAGCGGTTCTTTGCTGACCCGGAGATGCAGCGCAAAGCTAGAGGAAACATTGCACTACA
CCTTTGACAGGGCTACGTACGCCAGCCGCTGCAAGATCTCCAACGTGGAGCTGCAACCTGGTCT
CCTACCTTGAATTTTGCACGAAAACCGCCTTGGGCAAACGTGCTTCATTCCACGCTCAAGGGCGA
GGCGCGCCGCGACTACGTCCGCGACTGCGTTTTACTTATTTCTATGCTACACCTGGCAGACGGCCAT
GGGCGTTTGGCAGCAGTGCTTGGAGGAGTGCAACCTCAAGGAGCTGCAGAAACTGCTAAAGCAAAA
CTTGAAGGACCTATGGACGGCCTTCAACGAGCGCTCCGTGGCCGCGCACCTGGCGGACATCATTTT
CCCCGAACGCCTGCTTAAAACCCTGCAACAGGGTCTGCCAGACTTACCAGTCAAAGCATGTTGCA
GAACTTTAGGAACTTTATCCTAGAGCGCTCAGGAATCTTGCCCGCCACCTGCTGTGCACTTCTAGC
GACTTTGTGCCATTAAGTACCGCGAATGCCCTCCGCGCTTTGGGGCCACTGCTACCTTCTGCAG
CTAGCCAACTACCTTGCCTACCACTCTGACATAATGGAAGACGTGAGCGGTGACGGTCTACTGGAGT
GTCACTGTGCTGCAACCTATGCACCCCGCACCGCTCCCTGGTTTGAATTCGAGCTGCTTAAACGA
AAGTCAAATTATCGGTACCTTTGAGCTGCAGGGTCCCTCGCCTGACGAAAAGTCCGCGGCTCCGGG
GTTGAAACTCACTCCGGGGCTGTGGACGTGGGCTTACCTTCCGCAAATTTGTACCTGAGGACTACCAC
GCCACGAGATTAGGTTCTACGAAGACCAATCCCGCCCGCCAAATGCCGAGCTTACCGCCTGCGTC
ATTACCAGGGCCACATTTGGCCAATTGCAAGCCATCAACAAAGCCCGCCAAAGAGTTTCTGCTAC
GAAAGGGACGGGGGTTTACTTGGACCCCGAGTCCGGCGAGGAGCTCAACCCAATCCCCCGCCG
CCGACGCCCTATCAGCAGCAGCCGCGGGCCCTTGTTCAGGATGGCACCCAAAAAAGAAGCTGC
AGCTGCCCGCCACCCACGGACGAGGAGGAATACTGGGACAGTCAGGCAGAGGAGGTTTTGGAC
GAGGAGGAGGAGGACATGATGGAAGACTGGGAGAGCCTAGACGAGGAAGCTTCCGAGGTGGAAGA
GGTGTGACAGCAACACCGTCACCCCTCGGTGCGATTCCCTCGCCGGCGCCCCAGAAATCGGCAAC

CGGTTCCAGCATGGCTACAACCTCCGCTCCTCAGGCGCCGCCGGCACTGCCCGTTGCGCGACCCA
ACCGTAGATGGGACACCACTGGAACCAGGGCCGTAAGTCCAAGCAGCCGCCCGCTTAGCCCAA
GAGCAACAACAGCGCCAAGGCTACCGCTCATGGCGCGGGCACAAGAACGCCATAGTTGCTTGCTTG
CAAGACTGTGGGGGCAACATCTCCTTCGCCCGCCGCTTTCTTCTCTACCATCACGGCGTGCCCTTC
CCCCGTAACATCCTGCATTACTACCGTCATCTCTACAGCCCATACTGCACCGGGCGGCAGCGGCAGC
GGCAGCAACAGCAGCGGCCACACAGAAGCAAAGGCGACCGGATAGCAAGACTCTGACAAAGCCCA
AGAAATCCACAGCGGCGGCAGCAGCAGGAGGAGGAGCGCTGCGTCTGGCGCCCAACGAACCCGTA
TCGACCCGCGAGCTTAGAAACAGGATTTTTCCCACTCTGTATGCTATATTTCAACAGAGCAGGGGCC
AAGAACAAGAGCTGAAAATAAAAAACAGGTCTCTGCGATCCCTCACCCGCGAGCTGCCTGTATCAAA
AAGCGAAGATCAGCTTCGGCGCACGCTGGAAGACGCGGAGGCTCTTTCAGTAAATACTGCGCGCT
GACTCTTAAGGACTAGTTTCGCGCCCTTTCTCAAATTTAAGCGCGAAAACACTACGTCATCTCCAGCGG
CCACACCCGGCGCCAGCACCTGTCGTACGCGCCATTATGAGCAAGGAAATCCCACGCCCTACATG
TGGAGTTACCAGCCACAAATGGGACTTGCGGCTGGAGCTGCCAAGACTACTCAACCCGAATAAAC
TACATGAGCGCGGGACCCACATGATATCCCGGGTCAACGGAATCCGCGCCCACCGAAACCGAATT
CTCTTGAACAGCGGCTATTACCACACACCTCGTAATAACCTTAATCCCCGTAGTTGGCCCGCTG
CCCTGGTGTACCAGGAAAGTCCCGCTCCCACTGTGGTACTTCCAGAGACGCCAGCCAGCCGAAG
TTCAGATGACTAACTCAGGGGCGCAGCTTGCGGGCGGCTTTCTGTACAGGGTGCGGTGCGCCGGG
CAGGGTATAACTCACCTGACAATCAGAGGGCGAGGTATTCAGCTCAACGACGAGTCGGTGAGCTCC
TCGCTTGGTCTCCGTCCGGACGGGACATTTAGATCGGCGGCGCCGGCCGCTCCTTCATTACGCT
CGTCAGGCAATCCTAACTCTGCAGACCTCGTCTCTGAGCCGCGCTCTGGAGGCATTGGAACCTG
CAATTTATTGAGGAGTTTGTGCCATCGGTCTACTTTAACCCTTCTCGGGACCTCCCGGCCACTATC
CGGATCAATTTATTCTAACTTTGACGCGGTAAAGGACTCGGCGGACGGCTACGACTGAATGTTAAG
TGGAGAGGCAGAGCAACTGCGCCTGAAACACCTGGTCCACTGTCGCCGCCACAAGTGCTTTGCCCG
CGACTCCGGTGAGTTTTGCTACTTTGAATTGCCCGAGGATCATATCGAGGGCCCAGGCGCACGGCGT
CCGGCTTACCGCCAGGGAGAGCTTGCCCGTAGCCTGATTCGGGAGTTTACCCAGCGCCCCCTGCT
AGTTGAGCGGGACAGGGGACCCTGTGTTCTCACTGTGATTTGCAACTGTCCTAACCTTGGATTACAT
CAAGATCTTTGTTGCCATCTCTGTGCTGAGTATAATAATACAGAAATTAATAATACTGGGGCTCCTA
TCGCCATCCTGTAACGCCACCGTCTTCACCCGCCAAGCAAACCAAGGCGAACCTTACCTGGTACT
TTTAACATCTCTCCCTCTGTGATTTACAACAGTTTCAACCCAGACGGAGTGAGTCTACGAGAGAACCT
CTCCGAGCTCAGCTACTCCATCAGAAAAACACCACCCTCCTTACCTGCCGGGAACGTACGAGTGC
GTCACCCGGCCGCTGCACCACACCTACCGCCTGACCGTAAACCAGACTTTTTCCGGACAGACCTCAA
TAACTCTGTTTACCAGAACAGGAGGTGAGCTTAGAAAACCCCTTAGGGTATTAGGCCAAAGGCGCAGC
TACTGTGGGGTTTTATGAACAATCAAGCAACTCTACGGGCTATTCTAATTCAGGTTTCTCTAGAAATG
GACGGAATTATTACAGAGCAGCGCCTGCTAGAAAAGACGCAGGGCAGCGGCCGAGCAACAGCGCAT
GAATCAAGAGCTCCAAGACATGGTTAACTTGCACCAGTGCAAAAAGGGTATCTTTTGTCTGGTAAAG
CAGGCCAAAGTACCTACGACAGTAATACCACCGGACACCGCCTTAGCTACAAGTTGCCAACCAAG
CGTCAGAAATTGGTGGTCATGGTGGGAGAAAAGCCCATTACCATAACTCAGCACTCGGTAGAAACCG
AAGGCTGCATTCACTCACCTTGTCAAGGACCTGAGGATCTCTGCACCCTTATTAAGACCCTGTGCGG
TCTCAAAGATCTTATCCCTTTAACTAATAAAAAAAATAATAAAGCATCACTTCTTTAAAATCAGTTAG
CAAATTTCTGTCCAGTTTATTACGACGACCTCCTTGCCTCCTCCAGCTCTGTTGATTGCAGTTCC
TCTGGCTGCAAACTTTCTCCACAATCTAAATGCAATGTCAAGTTTCTCCTGTTCTGTCATCCGCA
CCCACTATCTTCATGTTGTTGAGATGAAGCGCGCAAGACCGTCTGAAGATACCTTCAACCCCGTGT
ATCCATATGACACGGAAACCGGTCTCCAACCTGTGCCTTTTTCTTACTCCTCCCTTTGTATCCCCAAT
GGGTTTCAAGAGAGTCCCCCTGGGGTACTCTCTTTGCGCCTATCCGAACCTCTAGTTACCTCCAATG
GCATGCTTGCGCTCAAAATGGGCAACGGCCTCTCTCTGGACGAGGCCGGCAACCTTACCTCCAAA
ATGTAACCACTGTGAGCCCACCTCTCAAAAAACCAAGTCAAACATAAACCTGGAATATCTGCACCC
CTCACAGTTACCTCAGAAGCCCTAACTGTGGCTGCCGCCGCACCTCTAATGGTCGCGGGCAACACA
CTCACCATGCAATCACAGGCCCGCTAACCGTGCACGACTCCAACTTAGCATTGCCACCCAAGGA
CCCCTCACAGTGTGAGAAGGAAAGCTAGCCCTGCAAACATCAGGCCCCCTCACACCACCGATAGC
AGTACCCTTACTATCACTGCCTCACCCCTCTAACTACTGCCACTGGTAGCTTGGGCATTGACTTGAA
AGAGCCCATTTATACACAAAATGAAAACTAGGACTAAAGTACGGGGCTCCTTTGCATGTAACAGAC
GACCTAAACACTTTGACCGTAGCAACTGGTCCAGGTGTGACTATTAATAATACTTCTTTGCAAACCTAA
AGTTACTGGAGCCTTGGGTTTTGATTCACAAGGCAATATGCAACTAATGTAGCAGGAGGACTAAGG
ATTGATTCTCAAAACAGACGCCTTATACTTGATGTTAGTTATCCGTTTTGATGCTCAAAACCAACTAAAT
CTAAGACTAGGACAGGGCCCTCTTTTTATAAACTCAGCCACAACCTTGGATATTAACCTACAACAAAGG
CCTTTACTTGTTTACAGCTTCAAACAATTCAAAAAGCTTGAGGTTAACCTAAGCACTGCCAAGGGGT
TGATGTTTGACGCTACAGCCATAGCCATTAATGCAGGAGATGGGCTTGAATTTGGTTACCTAATGC
ACCAACACAAATCCCCTCAAACAAAAATTGGCCATGGCCTAGAATTTGATTCAAACAAGGCTATGG

TTCCTAAACTAGGAACTGGCCTTAGTTTTGACAGCACAGGTGCCATTACAGTAGGAAACAAAATAAT
GATAAGCTAACTTTGTGGACCACACCAGCTCCATCTCCTAACTGTAGACTAAATGCAGAGAAAGATG
CTAAACTCACTTTGGTCTTAACAAAATGTGGCAGTCAAATACTTGCTACAGTTTCAGTTTTGGCTGTTA
AAGGCAGTTTGGCTCCAATATCTGGAACAGTTCAAAGTGCTCATCTTATTATAAGATTTGACGAAAAT
GGAGTGCTACTAAACAATTCCTTCTGGACCCAGAATATTGGAACCTTTAGAAAATGGAGATCTTACTGA
AGGCACAGCCTATACAAACGCTGTTGGATTTATGCCTAACCTATCAGCTTATCCAAAATCTCACGGTA
AAACTGCCAAAAGTAACATTGTCAAGTCAAGTTACTTAAACGGAGACAAAACCTAACCTGTAACACTA
ACCATTACACTAAACGGTACACAGGAAACAGGAGACACAACCTCCAAGTGCATACTCTATGTCATTTTC
ATGGGACTGGTCTGGCCACAACCTACATTAATGAAATATTTGCCACATCCTCTTACACTTTTTTCATACAT
TGCCCAAGAATAAAGAATCGTTTGTGTTATGTTTCAACGTGTTATTTTTCAATTGCAGAAAATTTGCA
ATCATTTTTTCATTCAGTAGTATAGCCCCACCACACATAGCTTATACAGATCACCGTACCTTAATCAA
CTCACAGAACCCTAGTATTCAACCTGCCACCTCCCTCCCAACACACAGAGTACACAGTCCTTTCTCC
CCGGCTGGCCTTAAAAGCATCATATCATGGGTAACAGACATATTCTTAGGTGTTATATTCCACACGG
TTTTCTGTGCGAGCCAAACGCTCATCAGTGATTAATAAACTCCCGGGCAGCTCACTTAAGTTCATG
TCGCTGCCAGCTGCTGAGCCACAGGCTGCTGTCCAACCTGCGGTTGCTTAAACGGCGGGCAGGA
GAAGTCCACGCCTACATGGGGGTAGAGTCAATAATCGTGCATCAGGATAGGGCGGTGGTGCTGCAGC
AGCGCGCAATAAACTGCTGCCGCGCGCTCCGTCTGCAGGAATAACATGGCAGTGGTCTCC
TCAGCGATGATTGCGACCGCCCGCAGCATAAGGCGCCTTGCTCCTCCGGGCACAGCAGCGCACCT
GATCTCACTTAAATCAGCACAGTAACTGCAGCACAGCACCACAATATTGTTCAAATCCCACAGTGCA
AGGCGCTGTATCCAAAGCTCATGGCGGGGACCACAGAACCACAGTGGCCATCATACCACAAGCGCA
GGTAGATTAAGTGGCGACCCCTCATAAACACGCTGGACATAAACATTACCTCTTTTGGCATGTTGTAA
TTCACCACCTCCCGGTACCATATAAACCTCTGATTAACATGGCGCCATCCACCACCATCCTAAACCA
GCTGGCCAAAACCTGCCCGCGGCTATACACTGCAGGGAACCGGGACTGGAACAATGACAGTGA
GAGCCAGGACTCGTAACCATGGATCATCATGCTCGTCATGATATCAATGTTGGCACAACACAGGCA
CACGTGCATACACTTCTCAGGATTACAAGCTCCTCCCGCGTTAGAACCATATCCCAGGGAACAACC
CATTCTGAATCAGCGTAAATCCCACACTGCAGGGAAGACCTCGCACGTAACCTCACGTTGTGCATTG
TCAAAGTGTTACATTGCGGCAGCAGCGGATGATCCTCCAGTATGGTAGCGCGGGTTTTCTGTCTCAA
AGGAGGTAGACGATCCCTACTGTACGGAGTGCGCCGAGACAACCGAGATCGTGTTGGTCTGATGT
CATGCCAAATGGAACGCCGGACGTAGTCATATTTCTGAAGCAAACAGGTGCGGGCGTGACAAA
CAGATCTGCGTCTCCGGTCTCGCCGTTAGATCGCTCTGTGTAGTAGTTGTAGTATATCCACTCTCT
CAAAGCATCCAGGCGCCCCCTGGCTTCCGGTCTATGTAACTCCTTCATGCGCCGCTGCCCTGATA
ACATCCACCACCGCAGAATAAGCCACACCCAGCCAACCTACACATTGTTCTGCGAGTCACACACGG
GAGGAGCGGGAAGAGCTGGAAGAACCATGTTTTTTTTTTTATTCCAAAAGATTATCCAAAACCTCAA
ATGAAGATCTATTAAGTGAACGCGCTCCCTCCGGTGGCGTGGTCAAACCTCTACAGCCAAAGAACAG
ATAATGGCATTGTAAGATGTTGCACAATGGCTTCCAAAAGGCAAACGGCCCTCACGTCCAAGTGA
CGTAAAGGCTAAACCTTCAGGGTGAATCTCCTCTATAAACATTCCAGCACCTTCAACCATGCCAAA
TAATTCTCATCTCGCCACCTTCTCAATATATCTCTAAGCAAATCCCGAATATTAAGTCCGGCCATTGTA
AAAATCTGCTCCAGAGCGCCCTCCACCTCAGCCTCAAGCAGCGAATCATGATTGCAAAAATTCAGG
TTCTCGACAGGCTGTATAAGATTCAAAGATTCAGGCAATTAACAAAATAACCGCATCCCGTAGTCC
CTTCGACAGGCCAGCTGAACATAATCGTGCAGGTCATGCACGGACCGGACCGGCCACTTCCCCGCC
AGGAACCTTGACAAAAGAACCACACTGATTATGACACGCATACTCGGAGCTATGCTAACCCAGCGTA
GCCCCGATGTAAGCTTTGTTGCATGGGCGGCGATATAAAATGCAAGGTGCTGCTCAAAAAATCAGGC
AAAGCCTCGCGCAAAAAAGAAAGCACATCGTAGTCATGCTCATGCAGATAAAGGCAGGTAAGCTCCG
GAACCACCACAGAAAAAGACACCATTTTTCTCTCAAACATGTCTGCGGGTTTCTGCATAAACACAAAA
TAAAATAACAAAAAACATTTAAACATTAGAAGCCTGTCTTACAACAGGAAAAACAACCCTTATAAGCA
TAAGACGGACTACGGCCATGCCGGCGTGACCGTAAAAAACTGGTCACCGTGATTAAAAAGCACCA
CCGACAGCTCCTCGGTGATGTCGGGAGTCATAATGTAAGACTCGGTAACACATCAGGTTGATTCAC
ATCGGTGAGTCTAAAAAGCGACCGAAATAGCCCGGGGGAATACATACCCGCAGGCGTAGAGACAA
CATTACAGCCCCATAGGAGGTATAACAAAATTAATAGGAGAGAAAAACACATAAACACCTGAAAAAC
CCTCCTGCCTAGGCAAAATAGCACCTCCCGCTCCAGAACAACATACAGCGCTTCCACAGCGGCAG
CCATAACAGTCAGCCTTACCAGTAAAAAAGAAAACCTATTAAAAAACACCACTCGACACGGCACCA
GCTCAATCAGTCACAGTGTAAAAAAGGGCCAAGTGCAGAGCGAGTATATATAGGACTAAAAAATGAC
GTAACGGTTAAAGTCCACAAAAAACCCAGAAAACCGCACGCGAACCTACGCCAGAAAACGAAAG
CCAAAAACCCACAACCTCCTCAAATCGTCACTTCCGTTTTCCACGTTACGTCACTTCCCATTTTAA
GAAAACATAATTCCCAACACATAAAGTTACTCCGCCCTAAAACCTACGTACCCCGCCCCGTTCCC
ACGCCCGCGCCACGTCACAACTCCACCCCTCATTATCATATTGGCTTCAATCCAAAATAAGGTAT
ATTATTGATGATGTTAATTAATTAATCCGCATGCGATATCGAGCTCTCCCGGGAATTCGGATCTGC
GACGCGAGGCTGGATGGCCTTCCCATTATGATTCTTCTCGCTTCCGGCGGCATCGGGATGCCCGC

GTTGCAGGCCATGCTGTCCAGGCAGGTAGATGACGACCATCAGGGACAGCTTCACGGCCAGCAAAA
GGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCA
TCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTT
CCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCC
TTTTCTCCCTTCGGAAGCGTGCGCTTTCTCAATGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGG
TCGTTCCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTACGCCCGACCGCTGCGCCTTATCCG
GTAACATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAA
CAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGG
CTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTT
GGTAGCTCTTGATCCGGCAAACAACCACCGCTGGTAGCGGTGGTTTTTTTTGTTTGCAAGCAGCAGA
TTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTG
GAACGAAAACCTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTT
TAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCAC
CTATCTCAGCGATCTGTCTATTTTCGTTCCATCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACG
ATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCACCGGCT
CCAGATTTATCAGCAATAAACCCAGCCAGCCGGAAGGGCCGAGCGCAGAAAGTGGTCCCTGCAACTTTA
TCCGCCTCCATCCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTT
GCGCAACGTTGTTGCCATTGNTGCAGGCATCGTGGTGTACGCTCGTCTGTTTGGTATGGCTTCATTC
AGCTCCGGTTCCTAACGATCAAGGCGAGTTACATGATCCCCATGTTGTGCAAAAAAGCGGTTAGCT
CCTTCGGTCCCTCCGATCGTTGTCAGAAGTAAGTTGGCCGAGTGTTATCACTCATGGTTATGGCAGC
ACTGCATAATTCTCTTACTGTCATGCCATCCGTAAGATGCTTTTTCTGTGACTGGTGAAGTACTCAACCA
AGTCATTCTGAGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCAACACGGGATAATAC
CGCGCCACATAGCAGAACTTTAAAAGTGCTCATCATTGGAAAACGTTCTTCGGGGCGAAAACTCTCA
AGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCAT
CTTTTACTTTCACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAAGGGAAT
AAGGGCGACACGGAAATGTTGAATACTCATACTCTTCTTTTTCAATATTATTGAAGCATTATCAGG
GTTATTGTCTCATGAGCGGATACATATTTGAATGTATTTAGAAAAATAAACAAATAGGGGTTCCGCGC
ACATTTCCCCGAAAAGTGCCACCTGACGTCTAAGAAACCATTATTATCATGACATTAACCTATAAAAAAT
AGGCGTATCACGAGGCCCTTTCGTCTTCAAGGATCCGAATTCGCCGGAGAGCTCGATATCGCATGC
GATTTAAATTAATTAAT