Appendix I: DNA sequences

Oligonucleotides

bbfw:

TATCTGCAGTGACAGGATATATTGGCGGG

bbrev:

TATGAATTCGGGTTACACCACAATATATGGTGCC

mrfpalpha1fw:

TATGAATTCCGTCTCAGGAGAGAGACCTTTACGGCTAGCTCAGTCCTAG

mrfpalpha1rev:

ATACTGCAGCGTCTCATGACAGCGAGAGACCTATAAACGCAGAAAGGCCCACC

mrfpalpha2fw:

TATGAATTCCGTCTCAGTCAGGAGAGAGACCTTTACGGCTAGCTCAGTCCTAG

mrfpalpha1rev:

ATACTGCAGCGTCTCAAGCGAGAGACCTATAAACGCAGAAAGGCCCACC

VerTUfw:

GCAACCTCTCGGGCTTCTGGAT

VerTUrv:

ACAGCGACTTAGTTTACCCGCCA

Plasmids

pARK α1:

CCTTGGCTTGTGGACAATGCGCTACGCGCACCGGCTCCGCCCGTGGACAACCGCAA
GCGGTTGCCCACCGTCGAGCGCCTTTGCCCACAACCCGGCGGCCGGCCGCAACAGA
TCGTTTTATAAATTTTTTTTTTTGAAAAAGAAAAAGCCCGAAAGGCGGCAACCTCT
CGGGCTTCTGGATTTCCGATCCCCGGAATTAGAGATCTTGGCAGGATATATTGTGG
TGTAACCCGAATTCCGTCTCAGGAGAGAGACCTTTACGGCTAGCTCAGTCCTAGGT
ATAGTGCTAGCTACTAGAGATTAAAGAGGAGAAATACTAGATGGCTTCCTCCGAA
GACGTTATCAAAGAGTTCATGCGTTTCAAAGTTCGTATGGAAGGTTCCGTTAACGG
TCACGAGTTCGAAATCGAAGGTGAAGGTGAAGGTCGTCCGTACGAAGGTACCCAG
ACCGCTAAACTGAAAGTTACCAAAGGTGGTCCGCTGCCGTTCGCTTGGGACATCCT
GTCCCCGCAGTTCCAGTACGGTTCCAAAGCTTACGTTAAACACCCGGCTGACATCC
CGGACTACCTGAAACTGTCCTTCCCGGAAGGTTTCAAATGGGAACGTGTTATGAAC
TTCGAAGACGGTGGTGTTGTTACCGTTACCCAGGACTCCTCCCTGCAAGACGGTGA
GTTCATCTACAAAGTTAAACTGCGTGGTACCAACTTCCCGTCCGACGGTCCGGTTA
TGCAGAAAAAAACCATGGGTTGGGAAGCTTCCACCGAACGTATGTACCCGGAAGA
CGGTGCTCTGAAAGGTGAAATCAAAATGCGTCTGAAACTGAAAGACGGTGGTCAC
TACGACGCTGAAGTTAAAACCACCTACATGGCTAAAAAACCGGTTCAGCTGCCGGG
TGCTTACAAAACCGACATCAAACTGGACATCACCTCCCACAACGAAGACTACACCA
TCGTTGAACAGTACGAACGTGCTGAAGGTCGTCACTCCACCGGTGCTTAATAACGC
TGATAGTGCTAGTGTAGATCGCTACTAGAGCCAGGCATCAAATAAAACGAAAGGC
TCAGTCGAAAGACTGGGCCTTTCGTTTTATCTGTTGTTTGTCGGTGAACGCTCTCT
ACTAGAGTCACACTGGCTCACCTTCGGGTGGGCCTTTCTGCGTTTATAGGTCTCTC
GCTGTCATGAGACGCTGCAGTGACAGGATATATTGGCGGGTAAACTAAGTCGCTG
TATGTGTTTGTTTGAGATCTCATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACC
GTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAGCAT
CACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGAT
ACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCG
CTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAG
CTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCGCTCCAAGCTGGGCTGTG
TGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTT
GAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAG
GATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCT
AACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGT
TACCTTCGGAAGAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTA
GCGGTGGTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCA
AGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACTCAC
GTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTA
AATTAAAAATGAAGTTTTAAATCAATCTAAAGTATATATGTGTAACATTGGTCTAG
TGATTAGAAAAACTCATCGAGCATCAAATGAAACTGCAATTTATTCATATCAGGAT
TATCAATACCATATTTTTGAAAAAGCCGTTTCTGTAATGAAGGAGAAAACTCACCG
AGGCAGTTCCATAGGATGGCAAGATCCTGGTATCGGTCTGCGATTCCGACTCGTCC
AACATCAATACAACCTATTAATTTCCCCTCGTCAAAAATAAGGTTATCAAGTGAGA
AATCACCATGAGTGACGACTGAATCCGGTGAGAATGGCAAAAGTTTATGCATTTCT

TTCCAGACTTGTTCAACAGGCCAGCCATTACGCTCGTCATCAAAATCACTCGCATC
AACCAAACCGTTATTCATTCGTGATTGCGCCTGAGCGAGTCGAAATACGCGATCGC
TGTTAAAAGGACAATTACAAACAGGAATCGAATGCAACCGGCGCAGGAACACTGC
CAGCGCATCAACAATATTTTCACCTGAATCAGGATATTCTTCTAATACCTGGAATG
CTGTTTTCCCTGGGATCGCAGTGGTGAGTAACCATGCATCATCAGGAGTACGGATA
AAATGCTTGATGGTCGGAAGAGGCATAAATTCCGTCAGCCAGTTTAGTCTGACCAT
CTCATCTGTAACAACATTGGCAACGCTACCTTTGCCATGTTTCAGAAACAACTCTG
GCGCATCGGGCTTCCCATACAATCGGTAGATTGTCGCACCTGATTGCCCGACATTA
TCGCGAGCCCATTTATACCCATATAAATCAGCATCCATGTTGGAATTTAATCGCGG
CCTTGAGCAAGACGTTTCCCGTTGAATATGGCTCATAACACCCCTTGTATTACTGT
TTATGTAAGCAGACAGTTTTATTGTTCATGATGATATATTTTTATCTTGTGCAATG
TAACATCAGAGATTTTGAGACACAACGTGGCTTTGTTGAATAAATCGAACTTTTGC
TGAGTTGAAGGATCAGATCACGCATCTTCCCGACAACGCAGACCGTTCCGTGGCAA
AGCAAAAGTTCAAAATCACCAACTGGTCCACCTACAACAAAGCTCTCATCAACCGT
GGCTCCCTCACTTTCTGGCTGGATGATGGGGCGATTCAGGCGATCCCCATCCAACA
GCCCGCCGTCGAGCGGGCTTTTTTATCCCCGGAAGCCTGTGGATAGAGGGTAGTT
ATCCACGTGAAACCGCTAATGCCCCGCAAAGCCTTGATTCACGGGGCTTTCCGGCC
CGCTCCAAAAACTATCCACGTGAAATCGCTAATCAGGGTACGTGAAATCGCTAATC
GGAGTACGTGAAATCGCTAATAAGGTCACGTGAAATCGCTAATCAAAAAGGCACG
TGAGAACGCTAATAGCCCTTTCAGATCAACAGCTTGCAAACACCCCTCGCTCCGGC
AAGTAGTTACAGCAAGTAGTATGTTCAATTAGCTTTTCAATTATGAATATATATAT
CAATTATTGGTCGC

pARK α2:

CTCAGTCAGGAGAGAGACCTTTACGGCTAGCTCAGTCCTAGGTATAGTGCTAGCTA
CTAGAGATTAAAGAGGAGAAATACTAGATGGCTTCCTCCGAAGACGTTATCAAAG
AGTTCATGCGTTTCAAAGTTCGTATGGAAGGTTCCGTTAACGGTCACGAGTTCGAA
ATCGAAGGTGAAGGTGAAGGTCGTCCGTACGAAGGTACCCAGACCGCTAAACTGA
AAGTTACCAAAGGTGGTCCGCTGCCGTTCGCTTGGGACATCCTGTCCCCGCAGTTC
CAGTACGGTTCCAAAGCTTACGTTAAACACCCGGCTGACATCCCGGACTACCTGAA
ACTGTCCTTCCCGGAAGGTTTCAAATGGGAACGTGTTATGAACTTCGAAGACGGT
GGTGTTGTTACCGTTACCCAGGACTCCTCCCTGCAAGACGGTGAGTTCATCTACAA
AGTTAAACTGCGTGGTACCAACTTCCCGTCCGACGGTCCGGTTATGCAGAAAAAAA
CCATGGGTTGGGAAGCTTCCACCGAACGTATGTACCCGGAAGACGGTGCTCTGAA
AGGTGAAATCAAAATGCGTCTGAAACTGAAAGACGGTGGTCACTACGACGCTGAA
GTTAAAACCACCTACATGGCTAAAAAACCGGTTCAGCTGCCGGGTGCTTACAAAAC
CGACATCAAACTGGACATCACCTCCCACAACGAAGACTACACCATCGTTGAACAGT
ACGAACGTGCTGAAGGTCGTCACTCCACCGGTGCTTAATAACGCTGATAGTGCTAG
TGTAGATCGCTACTAGAGCCAGGCATCAAATAAAACGAAAGGCTCAGTCGAAAGA
CTGGGCCTTTCGTTTTATCTGTTGTTTGTCGGTGAACGCTCTCTACTAGAGTCACA
CTGGCTCACCTTCGGGTGGGCCTTTCTGCGTTTATAGGTCTCTCGCTTGAGACGCT
GCAGTGACAGGATATATTGGCGGGTAAACTAAGTCGCTGTATGTGTTTGTTTGAG
ATCTCATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTT
GCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGACGCT
CAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCC

TGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGT
CCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTAT
CTCAGTTCGGTGTAGGTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGT
TCAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAA
GACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAG
GTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACT
AGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAGAAG
AGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTG
TTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTGATC
TTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACTCACGTTAAGGGATTTTGGT
CATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGTT
TTAAATCAATCTAAAGTATATATGTGTAACATTGGTCTAGTGATTAGAAAAACTCA
TCGAGCATCAAATGAAACTGCAATTTATTCATATCAGGATTATCAATACCATATTT
TTGAAAAAGCCGTTTCTGTAATGAAGGAGAAAACTCACCGAGGCAGTTCCATAGG
ATGGCAAGATCCTGGTATCGGTCTGCGATTCCGACTCGTCCAACATCAATACAACC
TATTAATTTCCCCTCGTCAAAAATAAGGTTATCAAGTGAGAAATCACCATGAGTGA
CGACTGAATCCGGTGAGAATGGCAAAAGTTTATGCATTTCTTTCCAGACTTGTTCA
ACAGGCCAGCCATTACGCTCGTCATCAAAATCACTCGCATCAACCAAACCGTTATT
CATTCGTGATTGCGCCTGAGCGAGTCGAAATACGCGATCGCTGTTAAAAGGACAA
TTACAAACAGGAATCGAATGCAACCGGCGCAGGAACACTGCCAGCGCATCAACAAT
ATTTTCACCTGAATCAGGATATTCTTCTAATACCTGGAATGCTGTTTTCCCTGGGA
TCGCAGTGGTGAGTAACCATGCATCATCAGGAGTACGGATAAAATGCTTGATGGT
CGGAAGAGGCATAAATTCCGTCAGCCAGTTTAGTCTGACCATCTCATCTGTAACAA
CATTGGCAACGCTACCTTTGCCATGTTTCAGAAACAACTCTGGCGCATCGGGCTTC
CCATACAATCGGTAGATTGTCGCACCTGATTGCCCGACATTATCGCGAGCCCATTT
ATACCCATATAAATCAGCATCCATGTTGGAATTTAATCGCGGCCTTGAGCAAGACG
TTTCCCGTTGAATATGGCTCATAACACCCCTTGTATTACTGTTTATGTAAGCAGAC
AGTTTTATTGTTCATGATGATATATTTTTATCTTGTGCAATGTAACATCAGAGATT
TTGAGACACAACGTGGCTTTGTTGAATAAATCGAACTTTTGCTGAGTTGAAGGATC
AGATCACGCATCTTCCCGACAACGCAGACCGTTCCGTGGCAAAGCAAAAGTTCAAA
ATCACCAACTGGTCCACCTACAACAAAGCTCTCATCAACCGTGGCTCCCTCACTTT
CTGGCTGGATGATGGGGCGATTCAGGCGATCCCCATCCAACAGCCCGCCGTCGAG
CGGGCTTTTTTATCCCCGGAAGCCTGTGGATAGAGGGTAGTTATCCACGTGAAACC
GCTAATGCCCCGCAAAGCCTTGATTCACGGGGCTTTCCGGCCCGCTCCAAAAACTA
TCCACGTGAAATCGCTAATCAGGGTACGTGAAATCGCTAATCGGAGTACGTGAAA
TCGCTAATAAGGTCACGTGAAATCGCTAATCAAAAAGGCACGTGAGAACGCTAATA
GCCCTTTCAGATCAACAGCTTGCAAACACCCCTCGCTCCGGCAAGTAGTTACAGCA
AGTAGTATGTTCAATTAGCTTTTCAATTATGAATATATATATCAATTATTGGTCGC
CCTTGGCTTGTGGACAATGCGCTACGCGCACCGGCTCCGCCCGTGGACAACCGCAA
GCGGTTGCCCACCGTCGAGCGCCTTTGCCCACAACCCGGCGGCCGGCCGCAACAGA
TCGTTTTATAAATTTTTTTTTTTGAAAAAGAAAAAGCCCGAAAGGCGGCAACCTCT
CGGGCTTCTGGATTTCCGATCCCCGGAATTAGAGATCTTGGCAGGATATATTGTGG
TGTAACCCGAATTCCGT

pARKA11:

CGCGATCGCTGTTAAAAGGACAATTACAAACAGGAATCGAATGCAACCGGCGCAG
GAACACTGCCAGCGCATCAACAATATTTTCACCTGAATCAGGATATTCTTCTAATA
CCTGGAATGCTGTTTTCCCTGGGATCGCAGTGGTGAGTAACCATGCATCATCAGGA
GTACGGATAAAATGCTTGATGGTCGGAAGAGGCATAAATTCCGTCAGCCAGTTTA
GTCTGACCATCTCATCTGTAACAACATTGGCAACGCTACCTTTGCCATGTTTCAGA
AACAACTCTGGCGCATCGGGCTTCCCATACAATCGGTAGATTGTCGCACCTGATTG
CCCGACATTATCGCGAGCCCATTTATACCCATATAAATCAGCATCCATGTTGGAAT
TTAATCGCGGCCTTGAGCAAGACGTTTCCCGTTGAATATGGCTCATAACACCCCTT
GTATTACTGTTTATGTAAGCAGACAGTTTTATTGTTCATGATGATATATTTTTATC
TTGTGCAATGTAACATCAGAGATTTTGAGACACAACGTGGCTTTGTTGAATAAATC
GAACTTTTGCTGAGTTGAAGGATCAGATCACGCATCTTCCCGACAACGCAGACCGT
TCCGTGGCAAAGCAAAAGTTCAAAATCACCAACTGGTCCACCTACAACAAAGCTCT
CATCAACCGTGGCTCCCTCACTTTCTGGCTGGATGATGGGGCGATTCAGGCGATCC
CCATCCAACAGCCCGCCGTCGAGCGGGCTTTTTTATCCCCGGAAGCCTGTGGATAG
AGGGTAGTTATCCACGTGAAACCGCTAATGCCCCGCAAAGCCTTGATTCACGGGGC
TTTCCGGCCCGCTCCAAAAACTATCCACGTGAAATCGCTAATCAGGGTACGTGAAA
TCGCTAATCGGAGTACGTGAAATCGCTAATAAGGTCACGTGAAATCGCTAATCAAA
AAGGCACGTGAGAACGCTAATAGCCCTTTCAGATCAACAGCTTGCAAACACCCCTC
GCTCCGGCAAGTAGTTACAGCAAGTAGTATGTTCAATTAGCTTTTCAATTATGAAT
ATATATATCAATTATTGGTCGCCCTTGGCTTGTGGACAATGCGCTACGCGCACCGG
CTCCGCCCGTGGACAACCGCAAGCGGTTGCCCACCGTCGAGCGCCTTTGCCCACAA
CCCGGCGGCCGGCCGCAACAGATCGTTTTATAAATTTTTTTTTTTGAAAAAGAAAA
AGCCCGAAAGGCGGCAACCTCTCGGGCTTCTGGATTTCCGATCCCCGGAATTAGAG
ATCTTGGCAGGATATATTGTGGTGTAACCCGAATTCCGTCTCAGGAGTACTAGACC
TGTAGGATCGTACAGGTTTACGCAAGAAAATGGTTTGTTATAGTCGAATAAATACT
ATTAAAGAGGAGAAATACTAGAATGCGTAAAGGAGAAGAACTTTTCACTGGAGTT
GTCCCAATTCTTGTTGAATTAGATGGTGATGTTAATGGGCACAAATTTTCTGTCAG
TGGAGAGGGTGAAGGTGATGCAACATACGGAAAACTTACCCTTAAATTTATTTGC
ACTACTGGAAAACTACCTGTTCCATGGCCAACACTTGTCACTACTTTCGGTTATGG
TGTTCAATGCTTTGCGAGATACCCAGATCATATGAAACAGCATGACTTTTTCAAGA
GTGCCATGCCCGAAGGTTATGTACAGGAAAGAACTATATTTTTCAAAGATGACGG
GAACTACAAGACACGTGCTGAAGTCAAGTTTGAAGGTGATACCCTTGTTAATAGA
ATCGAGTTAAAAGGTATTGATTTTAAAGAAGATGGAAACATTCTTGGACACAAATT
GGAATACAACTATAACTCACACAATGTATACATCATGGCAGACAAACAAAAGAATG
GAATCAAAGTTAACTTCAAAATTAGACACAACATTGAAGATGGAAGCGTTCAACTA
GCAGACCATTATCAACAAAATACTCCAATTGGCGATGGCCCTGTCCTTTTACCAGA
CAACCATTACCTGTCCACACAATCTGCCCTTTCGAAAGATCCCAACGAAAAGAGAG
ATCACATGGTCCTTCTTGAGTTTGTAACAGCTGCTGGGATTACACATGGCATGGAT
GAACTATACAAATAATAAGCTTCCAGGCATCAAATAAAACGAAAGGCTCAGTCGAA
AGACTGGGCCTTTCGTTTTATCTGTTGTTTGTCGGTGAACGCTCTCTACTAGAGTC
ACACTGGCTCACCTTCGGGTGGGCCTTTCTGCGTTTATACGCTGTCATGAGACGCT
GCAGTGACAGGATATATTGGCGGGTAAACTAAGTCGCTGTATGTGTTTGTTTGAG
ATCTCATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTT
GCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGACGCT

CAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCT
GGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTC
CGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATC
TCAGTTCGGTGTAGGTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTT
CAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAG
ACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGG
TATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTA
GAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAGAAGA
GTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGT
TTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTGATCT
TTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACTCACGTTAAGGGATTTTGGTC
ATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGTTT
TAAATCAATCTAAAGTATATATGTGTAACATTGGTCTAGTGATTAGAAAAACTCAT
CGAGCATCAAATGAAACTGCAATTTATTCATATCAGGATTATCAATACCATATTTT
TGAAAAAGCCGTTTCTGTAATGAAGGAGAAAACTCACCGAGGCAGTTCCATAGGA
TGGCAAGATCCTGGTATCGGTCTGCGATTCCGACTCGTCCAACATCAATACAACCT
ATTAATTTCCCCTCGTCAAAAATAAGGTTATCAAGTGAGAAATCACCATGAGTGAC
GACTGAATCCGGTGAGAATGGCAAAAGTTTATGCATTTCTTTCCAGACTTGTTCAA
CAGGCCAGCCATTACGCTCGTCATCAAAATCACTCGCATCAACCAAACCGTTATTC
ATTCGTGATTGCGCCTGAGCGAGTCGAAATA

pARKA12:

GACTGAATCCGGTGAGAATGGCAAAAGTTTATGCATTTCTTTCCAGACTTGTTCAA
CAGGCCAGCCATTACGCTCGTCATCAAAATCACTCGCATCAACCAAACCGTTATTC
ATTCGTGATTGCGCCTGAGCGAGTCGAAATACGCGATCGCTGTTAAAAGGACAAT
TACAAACAGGAATCGAATGCAACCGGCGCAGGAACACTGCCAGCGCATCAACAAT
ATTTTCACCTGAATCAGGATATTCTTCTAATACCTGGAATGCTGTTTTCCCTGGGA
TCGCAGTGGTGAGTAACCATGCATCATCAGGAGTACGGATAAAATGCTTGATGGT
CGGAAGAGGCATAAATTCCGTCAGCCAGTTTAGTCTGACCATCTCATCTGTAACAA
CATTGGCAACGCTACCTTTGCCATGTTTCAGAAACAACTCTGGCGCATCGGGCTTC
CCATACAATCGGTAGATTGTCGCACCTGATTGCCCGACATTATCGCGAGCCCATTT
ATACCCATATAAATCAGCATCCATGTTGGAATTTAATCGCGGCCTTGAGCAAGACG
TTTCCCGTTGAATATGGCTCATAACACCCCTTGTATTACTGTTTATGTAAGCAGAC
AGTTTTATTGTTCATGATGATATATTTTTATCTTGTGCAATGTAACATCAGAGATT
TTGAGACACAACGTGGCTTTGTTGAATAAATCGAACTTTTGCTGAGTTGAAGGATC
AGATCACGCATCTTCCCGACAACGCAGACCGTTCCGTGGCAAAGCAAAAGTTCAAA
ATCACCAACTGGTCCACCTACAACAAAGCTCTCATCAACCGTGGCTCCCTCACTTT
CTGGCTGGATGATGGGGCGATTCAGGCGATCCCCATCCAACAGCCCGCCGTCGAG
CGGGCTTTTTTATCCCCGGAAGCCTGTGGATAGAGGGTAGTTATCCACGTGAAACC
GCTAATGCCCCGCAAAGCCTTGATTCACGGGGCTTTCCGGCCCGCTCCAAAAACTA
TCCACGTGAAATCGCTAATCAGGGTACGTGAAATCGCTAATCGGAGTACGTGAAA
TCGCTAATAAGGTCACGTGAAATCGCTAATCAAAAAGGCACGTGAGAACGCTAATA
GCCCTTTCAGATCAACAGCTTGCAAACACCCCTCGCTCCGGCAAGTAGTTACAGCA
AGTAGTATGTTCAATTAGCTTTTCAATTATGAATATATATATCAATTATTGGTCGC
CCTTGGCTTGTGGACAATGCGCTACGCGCACCGGCTCCGCCCGTGGACAACCGCAA

GCGGTTGCCCACCGTCGAGCGCCTTTGCCCACAACCCGGCGGCCGGCCGCAACAGA
TCGTTTTATAAATTTTTTTTTTTGAAAAAGAAAAAGCCCGAAAGGCGGCAACCTCT
CGGGCTTCTGGATTTCCGATCCCCGGAATTAGAGATCTTGGCAGGATATATTGTGG
TGTAACCCGAATTCCGTCTCAGGAGTTTACGGCTAGCTCAGTCCTAGGTATAGTGC
TAGCTACTATTAAAGAGGAGAAATACTAGAATGACAATCATGATTAAGAAAAGCG
ATTTCTTAGCTATCCCGTCAGAAGAGTATAAAGGTATCCTGAGCCTGCGTTATCAA
GTCTTCAAACAGCGTCTGGAATGGGACTTGGTTGTGGAGAACAATCTTGAAAGCG
ACGAGTATGACAATTCAAATGCGGAGTACATTTACGCATGTGACGATACTGAGAAT
GTTTCAGGATGTTGGCGTCTTTTACCGACGACCGGGGATTACATGCTGAAGTCGG
TATTTCCCGAATTGTTAGGTCAACAATCCGCTCCGAAGGACCCGAACATCGTCGAA
CTTTCTCGTTTCGCGGTAGGGAAGAACAGCTCTAAAATTAACAATTCTGCCTCCGA
GATCACGATGAAGCTGTTCGAGGCTATCTATAAGCATGCGGTTTCGCAAGGTATTA
CGGAGTACGTAACTGTTACATCGACTGCCATCGAGCGTTTCCTGAAACGTATCAAG
GTGCCCTGTCACCGTATCGGTGATAAGGAAATCCATGTCTTAGGAGATACAAAATC
TGTAGTACTTTCCATGCCTATCAACGAACAGTTCAAAAAGGCAGTATTAAACTAAT
AAGCTTCCAGGCATCAAATAAAACGAAAGGCTCAGTCGAAAGACTGGGCCTTTCGT
TTTATCTGTTGTTTGTCGGTGAACGCTCTCTACTAGAGTCACACTGGCTCACCTTC
GGGTGGGCCTTTCTGCGTTTATACGCTGTCATGAGACGCTGCAGTGACAGGATAT
ATTGGCGGGTAAACTAAGTCGCTGTATGTGTTTGTTTGAGATCTCATGTGAGCAA
AAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCA
TAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGC
GAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTG
CGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTC
GGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAG
GTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTG
CGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGC
CACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGC
TACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTG
GTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAGAAGAGTTGGTAGCTCTTGA
TCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTTTGCAAGCAGCAGAT
TACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTG
ACGCTCAGTGGAACGAAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAA
AGGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGTTTTAAATCAATCTAAAG
TATATATGTGTAACATTGGTCTAGTGATTAGAAAAACTCATCGAGCATCAAATGAA
ACTGCAATTTATTCATATCAGGATTATCAATACCATATTTTTGAAAAAGCCGTTTC
TGTAATGAAGGAGAAAACTCACCGAGGCAGTTCCATAGGATGGCAAGATCCTGGT
ATCGGTCTGCGATTCCGACTCGTCCAACATCAATACAACCTATTAATTTCCCCTCG
TCAAAAATAAGGTTATCAAGTGAGAAATCACCATGAGTGAC

pARKA13:

CCTTGGCTTGTGGACAATGCGCTACGCGCACCGGCTCCGCCCGTGGACAACCGCAA
GCGGTTGCCCACCGTCGAGCGCCTTTGCCCACAACCCGGCGGCCGGCCGCAACAGA
TCGTTTTATAAATTTTTTTTTTTGAAAAAGAAAAAGCCCGAAAGGCGGCAACCTCT
CGGGCTTCTGGATTTCCGATCCCCGGAATTAGAGATCTTGGCAGGATATATTGTGG
TGTAACCCGAATTCCGTCTCAGGAGTACTAGACCTGTAGGATCGTACAGGTTTACG

CAAGAAAATGGTTTGTTATAGTCGAATAAATACTTCACACAGGAAAGTACTAGAAT
GGTACGCTGGACTTTGTGGGATACCCTCGCTTTCCTGCTCCTGTTGAGTTTATTGC
TGCCGTCATTGCTTATTATGTTCATCCCGTCAACATTCAAACGGCCTGTCTCATCA
TGGAAGGCGCTGAATTTACGGAAAACATTATTAATGGCGTCGAGCGTCCGGTTAA
AGCCGCTGAATTGTTCGCGCTTACCTTGCGTGTACGCGCAGGAAACACTGACGTTC
TTGCTGACGCAGAAGAAAACGTGCGTCAAAAATTACGTGCAGAAGGAGTGAGCTT
CCAGGCATCAAATAAAACGAAAGGCTCAGTCGAAAGACTGGGCCTTTCGTTTTATC
TGTTGTTTGTCGGTGAACGCTCTCTACTAGAGTCACACTGGCTCACCTTCGGGTGG
GCCTTTCTGCGTTTATACGCTGTCATGAGACGCTGCAGTGACAGGATATATTGGCG
GGTAAACTAAGTCGCTGTATGTGTTTGTTTGAGATCTCATGTGAGCAAAAGGCCA
GCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTC
CGCCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCC
GACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTC
CTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGC
GTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCG
CTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTTAT
CCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCA
GCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGT
TCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGC
GCTCTGCTGAAGCCAGTTACCTTCGGAAGAAGAGTTGGTAGCTCTTGATCCGGCAA
ACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTTTGCAAGCAGCAGATTACGCGCA
GAAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAG
TGGAACGAAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTT
CACCTAGATCCTTTTAAATTAAAAATGAAGTTTTAAATCAATCTAAAGTATATATG
TGTAACATTGGTCTAGTGATTAGAAAAACTCATCGAGCATCAAATGAAACTGCAAT
TTATTCATATCAGGATTATCAATACCATATTTTTGAAAAAGCCGTTTCTGTAATGA
AGGAGAAAACTCACCGAGGCAGTTCCATAGGATGGCAAGATCCTGGTATCGGTCT
GCGATTCCGACTCGTCCAACATCAATACAACCTATTAATTTCCCCTCGTCAAAAAT
AAGGTTATCAAGTGAGAAATCACCATGAGTGACGACTGAATCCGGTGAGAATGGC
AAAAGTTTATGCATTTCTTTCCAGACTTGTTCAACAGGCCAGCCATTACGCTCGTC
ATCAAAATCACTCGCATCAACCAAACCGTTATTCATTCGTGATTGCGCCTGAGCGA
GTCGAAATACGCGATCGCTGTTAAAAGGACAATTACAAACAGGAATCGAATGCAA
CCGGCGCAGGAACACTGCCAGCGCATCAACAATATTTTCACCTGAATCAGGATATT
CTTCTAATACCTGGAATGCTGTTTTCCCTGGGATCGCAGTGGTGAGTAACCATGCA
TCATCAGGAGTACGGATAAAATGCTTGATGGTCGGAAGAGGCATAAATTCCGTCA
GCCAGTTTAGTCTGACCATCTCATCTGTAACAACATTGGCAACGCTACCTTTGCCA
TGTTTCAGAAACAACTCTGGCGCATCGGGCTTCCCATACAATCGGTAGATTGTCGC
ACCTGATTGCCCGACATTATCGCGAGCCCATTTATACCCATATAAATCAGCATCCA
TGTTGGAATTTAATCGCGGCCTTGAGCAAGACGTTTCCCGTTGAATATGGCTCATA
ACACCCCTTGTATTACTGTTTATGTAAGCAGACAGTTTTATTGTTCATGATGATAT
ATTTTTATCTTGTGCAATGTAACATCAGAGATTTTGAGACACAACGTGGCTTTGTT
GAATAAATCGAACTTTTGCTGAGTTGAAGGATCAGATCACGCATCTTCCCGACAAC
GCAGACCGTTCCGTGGCAAAGCAAAAGTTCAAAATCACCAACTGGTCCACCTACAA
CAAAGCTCTCATCAACCGTGGCTCCCTCACTTTCTGGCTGGATGATGGGGCGATTC
AGGCGATCCCCATCCAACAGCCCGCCGTCGAGCGGGCTTTTTTATCCCCGGAAGCC

TGTGGATAGAGGGTAGTTATCCACGTGAAACCGCTAATGCCCCGCAAAGCCTTGAT
TCACGGGGCTTTCCGGCCCGCTCCAAAAACTATCCACGTGAAATCGCTAATCAGGG
TACGTGAAATCGCTAATCGGAGTACGTGAAATCGCTAATAAGGTCACGTGAAATC
GCTAATCAAAAAGGCACGTGAGAACGCTAATAGCCCTTTCAGATCAACAGCTTGCA
AACACCCCTCGCTCCGGCAAGTAGTTACAGCAAGTAGTATGTTCAATTAGCTTTTC
AATTATGAATATATATATCAATTATTGGTCGC

pARKA21:

CTGAGCGAGTCGAAATACGCGATCGCTGTTAAAAGGACAATTACAAACAGGAATC
GAATGCAACCGGCGCAGGAACACTGCCAGCGCATCAACAATATTTTCACCTGAATC
AGGATATTCTTCTAATACCTGGAATGCTGTTTTCCCTGGGATCGCAGTGGTGAGTA
ACCATGCATCATCAGGAGTACGGATAAAATGCTTGATGGTCGGAAGAGGCATAAA
TTCCGTCAGCCAGTTTAGTCTGACCATCTCATCTGTAACAACATTGGCAACGCTAC
CTTTGCCATGTTTCAGAAACAACTCTGGCGCATCGGGCTTCCCATACAATCGGTAG
ATTGTCGCACCTGATTGCCCGACATTATCGCGAGCCCATTTATACCCATATAAATC
AGCATCCATGTTGGAATTTAATCGCGGCCTTGAGCAAGACGTTTCCCGTTGAATAT
GGCTCATAACACCCCTTGTATTACTGTTTATGTAAGCAGACAGTTTTATTGTTCAT
GATGATATATTTTTATCTTGTGCAATGTAACATCAGAGATTTTGAGACACAACGTG
GCTTTGTTGAATAAATCGAACTTTTGCTGAGTTGAAGGATCAGATCACGCATCTTC
CCGACAACGCAGACCGTTCCGTGGCAAAGCAAAAGTTCAAAATCACCAACTGGTCC
ACCTACAACAAAGCTCTCATCAACCGTGGCTCCCTCACTTTCTGGCTGGATGATGG
GGCGATTCAGGCGATCCCCATCCAACAGCCCGCCGTCGAGCGGGCTTTTTTATCCC
CGGAAGCCTGTGGATAGAGGGTAGTTATCCACGTGAAACCGCTAATGCCCCGCAA
AGCCTTGATTCACGGGGCTTTCCGGCCCGCTCCAAAAACTATCCACGTGAAATCGC
TAATCAGGGTACGTGAAATCGCTAATCGGAGTACGTGAAATCGCTAATAAGGTCA
CGTGAAATCGCTAATCAAAAAGGCACGTGAGAACGCTAATAGCCCTTTCAGATCAA
CAGCTTGCAAACACCCCTCGCTCCGGCAAGTAGTTACAGCAAGTAGTATGTTCAAT
TAGCTTTTCAATTATGAATATATATATCAATTATTGGTCGCCCTTGGCTTGTGGAC
AATGCGCTACGCGCACCGGCTCCGCCCGTGGACAACCGCAAGCGGTTGCCCACCGT
CGAGCGCCTTTGCCCACAACCCGGCGGCCGGCCGCAACAGATCGTTTTATAAATTT
TTTTTTTTGAAAAAGAAAAAGCCCGAAAGGCGGCAACCTCTCGGGCTTCTGGATTT
CCGATCCCCGGAATTAGAGATCTTGGCAGGATATATTGTGGTGTAACAAGCTTCGT
CTCAGTCAGGAGTTTACGGCTAGCTCAGTCCTAGGTATAGTGCTAGCTACTATTAA
AGAGGAGAAATACTAGAATGAAAAACATAAATGCCGACGACACATACAGAATAAT
TAATAAAATTAAAGCTTGTAGAAGCAATAATGATATTAATCAATGCTTATCTGATA
TGACTAAAATGGTACATTGTGAATATTATTTACTCGCGATCATTTATCCTCATTCT
ATGGTTAAATCTGATATTTCAATCCTAGATAATTACCCTAAAAAATGGAGGCAATA
TTATGATGACGCTAATTTAATAAAATATGATCCTATAGTAGATTATTCTAACTCCA
ATCATTCACCAATTAATTGGAATATATTTGAAAACAATGCTGTAAATAAAAAATCT
CCAAATGTAATTAAAGAAGCGAAAACATCAGGTCTTATCACTGGGTTTAGTTTCCC
TATTCATACGGCTAACAATGGCTTCGGAATGCTTAGTTTTGCACATTCAGAAAAAG
ACAACTATATAGATAGTTTATTTTTACATGCGTGTATGAACATACCATTAATTGTT
CCTTCTCTAGTTGATAATTATCGAAAAATAAATATAGCAAATAATAAATCAAACAA
CGATTTAACCAAAAGAGAAAAAGAATGTTTAGCGTGGGCATGCGAAGGAAAAAGC
TCTTGGGATATTTCAAAAATATTAGGTTGCAGTGAGCGTACTGTCACTTTCCATTT

AACCAATGCGCAAATGAAACTCAATACAACAAACCGCTGCCAAAGTATTTCTAAAG
CAATTTTAACAGGAGCAATTGATTGCCCATACTTTAAAAATTAATAAGCTTCCAGG
CATCAAATAAAACGAAAGGCTCAGTCGAAAGACTGGGCCTTTCGTTTTATCTGTTG
TTTGTCGGTGAACGCTCTCTACTAGAGTCACACTGGCTCACCTTCGGGTGGGCCTT
TCTGCGTTTATACGCTTGAGACGAAGCTTGACAGGATATATTGGCGGGTAAACTAA
GTCGCTGTATGTGTTTGTTTGAGATCTCATGTGAGCAAAAGGCCAGCAAAAGGCC
AGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGA
CGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTA
TAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGAC
CCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTT
CTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCGCTCCAAGCTG
GGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTTATCCGGTAACTA
TCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTG
GTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTG
GTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGA
AGCCAGTTACCTTCGGAAGAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACC
GCTGGTAGCGGTGGTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAG
GATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAA
AACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGAT
CCTTTTAAATTAAAAATGAAGTTTTAAATCAATCTAAAGTATATATGTGTAACATT
GGTCTAGTGATTAGAAAAACTCATCGAGCATCAAATGAAACTGCAATTTATTCATA
TCAGGATTATCAATACCATATTTTTGAAAAAGCCGTTTCTGTAATGAAGGAGAAAA
CTCACCGAGGCAGTTCCATAGGATGGCAAGATCCTGGTATCGGTCTGCGATTCCGA
CTCGTCCAACATCAATACAACCTATTAATTTCCCCTCGTCAAAAATAAGGTTATCA
AGTGAGAAATCACCATGAGTGACGACTGAATCCGGTGAGAATGGCAAAAGTTTAT
GCATTTCTTTCCAGACTTGTTCAACAGGCCAGCCATTACGCTCGTCATCAAAATCA
CTCGCATCAACCAAACCGTTATTCATTCGTGATTGCGC

pARKA22:

TTAAAAGGACAATTACAAACAGGAATCGAATGCAACCGGCGCAGGAACACTGCCA
GCGCATCAACAATATTTTCACCTGAATCAGGATATTCTTCTAATACCTGGAATGCT
GTTTTCCCTGGGATCGCAGTGGTGAGTAACCATGCATCATCAGGAGTACGGATAA
AATGCTTGATGGTCGGAAGAGGCATAAATTCCGTCAGCCAGTTTAGTCTGACCATC
TCATCTGTAACAACATTGGCAACGCTACCTTTGCCATGTTTCAGAAACAACTCTGG
CGCATCGGGCTTCCCATACAATCGGTAGATTGTCGCACCTGATTGCCCGACATTAT
CGCGAGCCCATTTATACCCATATAAATCAGCATCCATGTTGGAATTTAATCGCGGC
CTTGAGCAAGACGTTTCCCGTTGAATATGGCTCATAACACCCCTTGTATTACTGTT
TATGTAAGCAGACAGTTTTATTGTTCATGATGATATATTTTTATCTTGTGCAATGT
AACATCAGAGATTTTGAGACACAACGTGGCTTTGTTGAATAAATCGAACTTTTGCT
GAGTTGAAGGATCAGATCACGCATCTTCCCGACAACGCAGACCGTTCCGTGGCAAA
GCAAAAGTTCAAAATCACCAACTGGTCCACCTACAACAAAGCTCTCATCAACCGTG
GCTCCCTCACTTTCTGGCTGGATGATGGGGCGATTCAGGCGATCCCCATCCAACAG
CCCGCCGTCGAGCGGGCTTTTTTATCCCCGGAAGCCTGTGGATAGAGGGTAGTTAT
CCACGTGAAACCGCTAATGCCCCGCAAAGCCTTGATTCACGGGGCTTTCCGGCCCG
CTCCAAAAACTATCCACGTGAAATCGCTAATCAGGGTACGTGAAATCGCTAATCGG

AGTACGTGAAATCGCTAATAAGGTCACGTGAAATCGCTAATCAAAAAGGCACGTG
AGAACGCTAATAGCCCTTTCAGATCAACAGCTTGCAAACACCCCTCGCTCCGGCAA
GTAGTTACAGCAAGTAGTATGTTCAATTAGCTTTTCAATTATGAATATATATATCA
ATTATTGGTCGCCCTTGGCTTGTGGACAATGCGCTACGCGCACCGGCTCCGCCCGT
GGACAACCGCAAGCGGTTGCCCACCGTCGAGCGCCTTTGCCCACAACCCGGCGGCC
GGCCGCAACAGATCGTTTTATAAATTTTTTTTTTTGAAAAAGAAAAAGCCCGAAAG
GCGGCAACCTCTCGGGCTTCTGGATTTCCGATCCCCGGAATTAGAGATCTTGGCAG
GATATATTGTGGTGTAACCCGAATTCCGTCTCAGTCAGGAGTACTAGACCTGTAGG
ATCGTACAGGTTTACGCAAGAAAATGGTTTGTTATAGTCGAATAAATACTTCACAC
AGGAAAGTACTAGAATGGTACGCTGGACTTTGTGGGATACCCTCGCTTTCCTGCTC
CTGTTGAGTTTATTGCTGCCGTCATTGCTTATTATGTTCATCCCGTCAACATTCAA
ACGGCCTGTCTCATCATGGAAGGCGCTGAATTTACGGAAAACATTATTAATGGCGT
CGAGCGTCCGGTTAAAGCCGCTGAATTGTTCGCGCTTACCTTGCGTGTACGCGCAG
GAAACACTGACGTTCTTGCTGACGCAGAAGAAAACGTGCGTCAAAAATTACGTGCA
GAAGGAGTGAGCTTCCAGGCATCAAATAAAACGAAAGGCTCAGTCGAAAGACTGG
GCCTTTCGTTTTATCTGTTGTTTGTCGGTGAACGCTCTCTACTAGAGTCACACTGG
CTCACCTTCGGGTGGGCCTTTCTGCGTTTATACGCTTGAGACGCTGCAGTGACAGG
ATATATTGGCGGGTAAACTAAGTCGCTGTATGTGTTTGTTTGAGATCTCATGTGAG
CAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTT
CCATAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGT
GGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTC
GTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCC
TTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGT
AGGTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGC
TGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATC
GCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGT
GCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATT
TGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAGAAGAGTTGGTAGCTCTT
GATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTTTGCAAGCAGCAG
ATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTC
TGACGCTCAGTGGAACGAAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAA
AAAGGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGTTTTAAATCAATCTAA
AGTATATATGTGTAACATTGGTCTAGTGATTAGAAAAACTCATCGAGCATCAAATG
AAACTGCAATTTATTCATATCAGGATTATCAATACCATATTTTTGAAAAAGCCGTT
TCTGTAATGAAGGAGAAAACTCACCGAGGCAGTTCCATAGGATGGCAAGATCCTG
GTATCGGTCTGCGATTCCGACTCGTCCAACATCAATACAACCTATTAATTTCCCCT
CGTCAAAAATAAGGTTATCAAGTGAGAAATCACCATGAGTGACGACTGAATCCGG
TGAGAATGGCAAAAGTTTATGCATTTCTTTCCAGACTTGTTCAACAGGCCAGCCAT
TACGCTCGTCATCAAAATCACTCGCATCAACCAAACCGTTATTCATTCGTGATTGC
GCCTGAGCGAGTCGAAATACGCGATCGCTG

pARSO11:

TAACGGATCCGGTCTCAGGAGTACTAGACCTGTAGGATCGTACAGGTTTACGCAA
GAAAATGGTTTGTTATAGTCGAATAAATACTATTAAAGAGGAGAAATACTAGAAT
GCGTAAAGGAGAAGAACTTTTCACTGGAGTTGTCCCAATTCTTGTTGAATTAGATG

GTGATGTTAATGGGCACAAATTTTCTGTCAGTGGAGAGGGTGAAGGTGATGCAAC
ATACGGAAAACTTACCCTTAAATTTATTTGCACTACTGGAAAACTACCTGTTCCAT
GGCCAACACTTGTCACTACTTTCGGTTATGGTGTTCAATGCTTTGCGAGATACCCA
GATCATATGAAACAGCATGACTTTTTCAAGAGTGCCATGCCCGAAGGTTATGTACA
GGAAAGAACTATATTTTTCAAAGATGACGGGAACTACAAGACACGTGCTGAAGTC
AAGTTTGAAGGTGATACCCTTGTTAATAGAATCGAGTTAAAAGGTATTGATTTTAA
AGAAGATGGAAACATTCTTGGACACAAATTGGAATACAACTATAACTCACACAATG
TATACATCATGGCAGACAAACAAAAGAATGGAATCAAAGTTAACTTCAAAATTAGA
CACAACATTGAAGATGGAAGCGTTCAACTAGCAGACCATTATCAACAAAATACTCC
AATTGGCGATGGCCCTGTCCTTTTACCAGACAACCATTACCTGTCCACACAATCTG
CCCTTTCGAAAGATCCCAACGAAAAGAGAGATCACATGGTCCTTCTTGAGTTTGTA
ACAGCTGCTGGGATTACACATGGCATGGATGAACTATACAAATAATAAGCTTCCAG
GCATCAAATAAAACGAAAGGCTCAGTCGAAAGACTGGGCCTTTCGTTTTATCTGTT
GTTTGTCGGTGAACGCTCTCTACTAGAGTCACACTGGCTCACCTTCGGGTGGGCCT
TTCTGCGTTTATACGCTGTCAGGAGTTTACGGCTAGCTCAGTCCTAGGTATAGTGC
TAGCTACTATTAAAGAGGAGAAATACTAGAATGAAAAACATAAATGCCGACGACA
CATACAGAATAATTAATAAAATTAAAGCTTGTAGAAGCAATAATGATATTAATCAA
TGCTTATCTGATATGACTAAAATGGTACATTGTGAATATTATTTACTCGCGATCAT
TTATCCTCATTCTATGGTTAAATCTGATATTTCAATCCTAGATAATTACCCTAAAA
AATGGAGGCAATATTATGATGACGCTAATTTAATAAAATATGATCCTATAGTAGAT
TATTCTAACTCCAATCATTCACCAATTAATTGGAATATATTTGAAAACAATGCTGT
AAATAAAAAATCTCCAAATGTAATTAAAGAAGCGAAAACATCAGGTCTTATCACTG
GGTTTAGTTTCCCTATTCATACGGCTAACAATGGCTTCGGAATGCTTAGTTTTGCA
CATTCAGAAAAAGACAACTATATAGATAGTTTATTTTTACATGCGTGTATGAACAT
ACCATTAATTGTTCCTTCTCTAGTTGATAATTATCGAAAAATAAATATAGCAAATA
ATAAATCAAACAACGATTTAACCAAAAGAGAAAAAGAATGTTTAGCGTGGGCATG
CGAAGGAAAAAGCTCTTGGGATATTTCAAAAATATTAGGTTGCAGTGAGCGTACT
GTCACTTTCCATTTAACCAATGCGCAAATGAAACTCAATACAACAAACCGCTGCCA
AAGTATTTCTAAAGCAATTTTAACAGGAGCAATTGATTGCCCATACTTTAAAAATT
AATAAGCTTCCAGGCATCAAATAAAACGAAAGGCTCAGTCGAAAGACTGGGCCTTT
CGTTTTATCTGTTGTTTGTCGGTGAACGCTCTCTACTAGAGTCACACTGGCTCACC
TTCGGGTGGGCCTTTCTGCGTTTATACGCTGTCATGAGACCGGATCCTGACAGGAT
ATATTGGCGGGTAAACTAAGTCGCTGTATGTGTTTGTTTGAGATCTCATGTGAGCA
AAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCC
ATAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGG
CGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGT
GCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTT
CGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAG
GTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTG
CGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGC
CACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGC
TACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTG
GTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAGAAGAGTTGGTAGCTCTTGA
TCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTTTGCAAGCAGCAGAT
TACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTG

ACGCTCAGTGGAACGAAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAA
AGGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGTTTTAAATCAATCTAAAG
TATATATGTGTAACATTGGTCTAGTGATTATTTGCCGACTACCTTGGTGATCTCGC
CTTTCACGTAGTGGACAAATTCTTCCAACTGATCTGCGCGCGAGGCCAAGCGATCT
TCTTCTTGTCCAAGATAAGCCTGTCTAGCTTCAAGTATGACGGGCTGATACTGGGC
CGGCAGGCGCTCCATTGCCCAGTCGGCAGCGACATCCTTCGGCGCGATTTTGCCGG
TTACTGCGCTGTACCAAATGCGGGACAACGTAAGCACTACATTTCGCTCATCACCA
GCCCAGTCGGGCGGCGAGTTCCATAGCGTTAAGGTTTCATTTAGCGCCTCAAATAG
ATCCTGTTCAGGAACCGGATCAAAGAGTTCCTCCGCCGCTGGACCTACCAAGGCAA
CGCTATGTTCTCTTGCTTTTGTCAGCAAGATAGCCAGATCAATGTCGATCGTGGCT
GGCTCGAAGATACCTGCAAGAATGTCATTGCGCTGCCATTCTCCAAATTGCAGTTC
GCGCTTAGCTGGATAACGCCACGGAATGATGTCGTCGTGCACAACAATGGTGACT
TCTACAGCGCGGAGAATCTCGCTCTCTCCAGGGGAAGCCGAAGTTTCCAAAAGGTC
GTTGATCAAAGCTCGCCGCGTTGTTTCATCAAGCCTTACGGTCACCGTAACCAGCA
AATCAATATCACTGTGTGGCTTCAGGCCGCCATCCACTGCGGAGCCGTACAAATGT
ACGGCCAGCAACGTCGGTTCGAGATGGCGCTCGATGACGCCAACTACCTCTGATAG
TTGAGTCGATACTTCGGCGATCACCGCTTCCCTCATGATGTTTAACTTTGTTTTAG
GGCGACTGCCCTGCTGCGTAACATCGTTGCTGCTCCATAACATCAAACATCGACCC
ACGGCGTAACGCGCTTGCTGCTTGGATGCCCGAGGCATAGACTGTACCCCAAAAAA
ACAGTCATAACAAGCCATGAAAACCGCCACTGCGCCGTTACCACCGCTGCGTTCGG
TCAAGGTTCTGGACCAGTTGCGTGAGCGCATACGCTACTTGCATTACAGCTTACGA
ACCGAACAGGCTTATGTCCACTGGGTTCGTGCCTTCATCCGTTTCCACGGTGTGCG
TCACCCGGCAACCTTGGGCAGCAGCGAAGTCGAGGCATTTCTGTCCTGGCTGGAAC
ACCCCTTGTATTACTGTTTATGTAAGCAGACAGTTTTATTGTTCATGATGATATAT
TTTTATCTTGTGCAATGTAACATCAGAGATTTTGAGACACAACGTGGCTTTGTTGA
ATAAATCGAACTTTTGCTGAGTTGAAGGATCAGATCACGCATCTTCCCGACAACGC
AGACCGTTCCGTGGCAAAGCAAAAGTTCAAAATCACCAACTGGTCCACCTACAACA
AAGCTCTCATCAACCGTGGCTCCCTCACTTTCTGGCTGGATGATGGGGCGATTCAG
GCGATCCCCATCCAACAGCCCGCCGTCGAGCGGGCTTTTTTATCCCCGGAAGCCTG
TGGATAGAGGGTAGTTATCCACGTGAAACCGCTAATGCCCCGCAAAGCCTTGATTC
ACGGGGCTTTCCGGCCCGCTCCAAAAACTATCCACGTGAAATCGCTAATCAGGGTA
CGTGAAATCGCTAATCGGAGTACGTGAAATCGCTAATAAGGTCACGTGAAATCGCT
AATCAAAAAGGCACGTGAGAACGCTAATAGCCCTTTCAGATCAACAGCTTGCAAAC
ACCCCTCGCTCCGGCAAGTAGTTACAGCAAGTAGTATGTTCAATTAGCTTTTCAAT
TATGAATATATATATCAATTATTGGTCGCCCTTGGCTTGTGGACAATGCGCTACGC
GCACCGGCTCCGCCCGTGGACAACCGCAAGCGGTTGCCCACCGTCGAGCGCCTTTG
CCCACAACCCGGCGGCCGGCCGCAACAGATCGTTTTATAAATTTTTTTTTTTGAAA
AAGAAAAAGCCCGAAAGGCGGCAACCTCTCGGGCTTCTGGATTTCCGATCCCCGGA
ATTAGAGATCTTGGCAGGATATATTGTGGTG

pARSO12:

TAACGGATCCGGTCTCAGGAGTACTAGACCTGTAGGATCGTACAGGTTTACGCAA
GAAAATGGTTTGTTATAGTCGAATAAATACTTCACACAGGAAAGTACTAGAATGGT
ACGCTGGACTTTGTGGGATACCCTCGCTTTCCTGCTCCTGTTGAGTTTATTGCTGC
CGTCATTGCTTATTATGTTCATCCCGTCAACATTCAAACGGCCTGTCTCATCATGG

AAGGCGCTGAATTTACGGAAAACATTATTAATGGCGTCGAGCGTCCGGTTAAAGC
CGCTGAATTGTTCGCGCTTACCTTGCGTGTACGCGCAGGAAACACTGACGTTCTTG
CTGACGCAGAAGAAAACGTGCGTCAAAAATTACGTGCAGAAGGAGTGAGCTTCCA
GGCATCAAATAAAACGAAAGGCTCAGTCGAAAGACTGGGCCTTTCGTTTTATCTGT
TGTTTGTCGGTGAACGCTCTCTACTAGAGTCACACTGGCTCACCTTCGGGTGGGCC
TTTCTGCGTTTATACGCTGTCAGGAGTTTACGGCTAGCTCAGTCCTAGGTATAGTG
CTAGCTACTATTAAAGAGGAGAAATACTAGAATGAAAAACATAAATGCCGACGACA
CATACAGAATAATTAATAAAATTAAAGCTTGTAGAAGCAATAATGATATTAATCAA
TGCTTATCTGATATGACTAAAATGGTACATTGTGAATATTATTTACTCGCGATCAT
TTATCCTCATTCTATGGTTAAATCTGATATTTCAATCCTAGATAATTACCCTAAAA
AATGGAGGCAATATTATGATGACGCTAATTTAATAAAATATGATCCTATAGTAGAT
TATTCTAACTCCAATCATTCACCAATTAATTGGAATATATTTGAAAACAATGCTGT
AAATAAAAAATCTCCAAATGTAATTAAAGAAGCGAAAACATCAGGTCTTATCACTG
GGTTTAGTTTCCCTATTCATACGGCTAACAATGGCTTCGGAATGCTTAGTTTTGCA
CATTCAGAAAAAGACAACTATATAGATAGTTTATTTTTACATGCGTGTATGAACAT
ACCATTAATTGTTCCTTCTCTAGTTGATAATTATCGAAAAATAAATATAGCAAATA
ATAAATCAAACAACGATTTAACCAAAAGAGAAAAAGAATGTTTAGCGTGGGCATG
CGAAGGAAAAAGCTCTTGGGATATTTCAAAAATATTAGGTTGCAGTGAGCGTACT
GTCACTTTCCATTTAACCAATGCGCAAATGAAACTCAATACAACAAACCGCTGCCA
AAGTATTTCTAAAGCAATTTTAACAGGAGCAATTGATTGCCCATACTTTAAAAATT
AATAAGCTTCCAGGCATCAAATAAAACGAAAGGCTCAGTCGAAAGACTGGGCCTTT
CGTTTTATCTGTTGTTTGTCGGTGAACGCTCTCTACTAGAGTCACACTGGCTCACC
TTCGGGTGGGCCTTTCTGCGTTTATACGCTGTCATGAGACCGGATCCTGACAGGAT
ATATTGGCGGGTAAACTAAGTCGCTGTATGTGTTTGTTTGAGATCTCATGTGAGCA
AAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCC
ATAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGG
CGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGT
GCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTT
CGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAG
GTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTG
CGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGC
CACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGC
TACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTG
GTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAGAAGAGTTGGTAGCTCTTGA
TCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTTTGCAAGCAGCAGAT
TACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTG
ACGCTCAGTGGAACGAAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAA
AGGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGTTTTAAATCAATCTAAAG
TATATATGTGTAACATTGGTCTAGTGATTATTTGCCGACTACCTTGGTGATCTCGC
CTTTCACGTAGTGGACAAATTCTTCCAACTGATCTGCGCGCGAGGCCAAGCGATCT
TCTTCTTGTCCAAGATAAGCCTGTCTAGCTTCAAGTATGACGGGCTGATACTGGGC
CGGCAGGCGCTCCATTGCCCAGTCGGCAGCGACATCCTTCGGCGCGATTTTGCCGG
TTACTGCGCTGTACCAAATGCGGGACAACGTAAGCACTACATTTCGCTCATCACCA
GCCCAGTCGGGCGGCGAGTTCCATAGCGTTAAGGTTTCATTTAGCGCCTCAAATAG
ATCCTGTTCAGGAACCGGATCAAAGAGTTCCTCCGCCGCTGGACCTACCAAGGCAA

CGCTATGTTCTCTTGCTTTTGTCAGCAAGATAGCCAGATCAATGTCGATCGTGGCT
GGCTCGAAGATACCTGCAAGAATGTCATTGCGCTGCCATTCTCCAAATTGCAGTTC
GCGCTTAGCTGGATAACGCCACGGAATGATGTCGTCGTGCACAACAATGGTGACT
TCTACAGCGCGGAGAATCTCGCTCTCTCCAGGGGAAGCCGAAGTTTCCAAAAGGTC
GTTGATCAAAGCTCGCCGCGTTGTTTCATCAAGCCTTACGGTCACCGTAACCAGCA
AATCAATATCACTGTGTGGCTTCAGGCCGCCATCCACTGCGGAGCCGTACAAATGT
ACGGCCAGCAACGTCGGTTCGAGATGGCGCTCGATGACGCCAACTACCTCTGATAG
TTGAGTCGATACTTCGGCGATCACCGCTTCCCTCATGATGTTTAACTTTGTTTTAG
GGCGACTGCCCTGCTGCGTAACATCGTTGCTGCTCCATAACATCAAACATCGACCC
ACGGCGTAACGCGCTTGCTGCTTGGATGCCCGAGGCATAGACTGTACCCCAAAAAA
ACAGTCATAACAAGCCATGAAAACCGCCACTGCGCCGTTACCACCGCTGCGTTCGG
TCAAGGTTCTGGACCAGTTGCGTGAGCGCATACGCTACTTGCATTACAGCTTACGA
ACCGAACAGGCTTATGTCCACTGGGTTCGTGCCTTCATCCGTTTCCACGGTGTGCG
TCACCCGGCAACCTTGGGCAGCAGCGAAGTCGAGGCATTTCTGTCCTGGCTGGAAC
ACCCCTTGTATTACTGTTTATGTAAGCAGACAGTTTTATTGTTCATGATGATATAT
TTTTATCTTGTGCAATGTAACATCAGAGATTTTGAGACACAACGTGGCTTTGTTGA
ATAAATCGAACTTTTGCTGAGTTGAAGGATCAGATCACGCATCTTCCCGACAACGC
AGACCGTTCCGTGGCAAAGCAAAAGTTCAAAATCACCAACTGGTCCACCTACAACA
AAGCTCTCATCAACCGTGGCTCCCTCACTTTCTGGCTGGATGATGGGGCGATTCAG
GCGATCCCCATCCAACAGCCCGCCGTCGAGCGGGCTTTTTTATCCCCGGAAGCCTG
TGGATAGAGGGTAGTTATCCACGTGAAACCGCTAATGCCCCGCAAAGCCTTGATTC
ACGGGGCTTTCCGGCCCGCTCCAAAAACTATCCACGTGAAATCGCTAATCAGGGTA
CGTGAAATCGCTAATCGGAGTACGTGAAATCGCTAATAAGGTCACGTGAAATCGCT
AATCAAAAAGGCACGTGAGAACGCTAATAGCCCTTTCAGATCAACAGCTTGCAAAC
ACCCCTCGCTCCGGCAAGTAGTTACAGCAAGTAGTATGTTCAATTAGCTTTTCAAT
TATGAATATATATATCAATTATTGGTCGCCCTTGGCTTGTGGACAATGCGCTACGC
GCACCGGCTCCGCCCGTGGACAACCGCAAGCGGTTGCCCACCGTCGAGCGCCTTTG
CCCACAACCCGGCGGCCGGCCGCAACAGATCGTTTTATAAATTTTTTTTTTTGAAA
AAGAAAAAGCCCGAAAGGCGGCAACCTCTCGGGCTTCTGGATTTCCGATCCCCGGA
ATTAGAGATCTTGGCAGGATATATTGTGGTG

pARSO21:

TAGTTATCCACGTGAAACCGCTAATGCCCCGCAAAGCCTTGATTCACGGGGCTTTC
CGGCCCGCTCCAAAAACTATCCACGTGAAATCGCTAATCAGGGTACGTGAAATCGC
TAATCGGAGTACGTGAAATCGCTAATAAGGTCACGTGAAATCGCTAATCAAAAAG
GCACGTGAGAACGCTAATAGCCCTTTCAGATCAACAGCTTGCAAACACCCCTCGCT
CCGGCAAGTAGTTACAGCAAGTAGTATGTTCAATTAGCTTTTCAATTATGAATATA
TATATCAATTATTGGTCGCCCTTGGCTTGTGGACAATGCGCTACGCGCACCGGCTC
CGCCCGTGGACAACCGCAAGCGGTTGCCCACCGTCGAGCGCCTTTGCCCACAACCC
GGCGGCCGGCCGCAACAGATCGTTTTATAAATTTTTTTTTTTGAAAAAGAAAAAGC
CCGAAAGGCGGCAACCTCTCGGGCTTCTGGATTTCCGATCCCCGGAATTAGAGATC
TTGGCAGGATATATTGTGGTGTAACGATATCGGTCTCAGTCAGGAGTTTACGGCT
AGCTCAGTCCTAGGTATAGTGCTAGCTACTATTAAAGAGGAGAAATACTAGAATG
ACAATCATGATTAAGAAAAGCGATTTCTTAGCTATCCCGTCAGAAGAGTATAAAGG
TATCCTGAGCCTGCGTTATCAAGTCTTCAAACAGCGTCTGGAATGGGACTTGGTTG

TGGAGAACAATCTTGAAAGCGACGAGTATGACAATTCAAATGCGGAGTACATTTA
CGCATGTGACGATACTGAGAATGTTTCAGGATGTTGGCGTCTTTTACCGACGACCG
GGGATTACATGCTGAAGTCGGTATTTCCCGAATTGTTAGGTCAACAATCCGCTCCG
AAGGACCCGAACATCGTCGAACTTTCTCGTTTCGCGGTAGGGAAGAACAGCTCTAA
AATTAACAATTCTGCCTCCGAGATCACGATGAAGCTGTTCGAGGCTATCTATAAGC
ATGCGGTTTCGCAAGGTATTACGGAGTACGTAACTGTTACATCGACTGCCATCGAG
CGTTTCCTGAAACGTATCAAGGTGCCCTGTCACCGTATCGGTGATAAGGAAATCCA
TGTCTTAGGAGATACAAAATCTGTAGTACTTTCCATGCCTATCAACGAACAGTTCA
AAAAGGCAGTATTAAACTAATAAGCTTCCAGGCATCAAATAAAACGAAAGGCTCAG
TCGAAAGACTGGGCCTTTCGTTTTATCTGTTGTTTGTCGGTGAACGCTCTCTACTA
GAGTCACACTGGCTCACCTTCGGGTGGGCCTTTCTGCGTTTATACGCTGTCAGGAG
TACTAGACCTGTAGGATCGTACAGGTTTACGCAAGAAAATGGTTTGTTATAGTCGA
ATAAATACTTCACACAGGAAAGTACTAGAATGGTACGCTGGACTTTGTGGGATACC
CTCGCTTTCCTGCTCCTGTTGAGTTTATTGCTGCCGTCATTGCTTATTATGTTCAT
CCCGTCAACATTCAAACGGCCTGTCTCATCATGGAAGGCGCTGAATTTACGGAAAA
CATTATTAATGGCGTCGAGCGTCCGGTTAAAGCCGCTGAATTGTTCGCGCTTACCT
TGCGTGTACGCGCAGGAAACACTGACGTTCTTGCTGACGCAGAAGAAAACGTGCG
TCAAAAATTACGTGCAGAAGGAGTGAGCTTCCAGGCATCAAATAAAACGAAAGGC
TCAGTCGAAAGACTGGGCCTTTCGTTTTATCTGTTGTTTGTCGGTGAACGCTCTCT
ACTAGAGTCACACTGGCTCACCTTCGGGTGGGCCTTTCTGCGTTTATACGCTTGAG
ACCGATATCTGACAGGATATATTGGCGGGTAAACTAAGTCGCTGTATGTGTTTGTT
TGAGATCTCATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCG
CGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGA
CGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTC
CCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATAC
CTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAG
GTATCTCAGTTCGGTGTAGGTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCC
CCGTTCAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCG
GTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAG
CGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTA
CACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAA
GAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTT
TTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTT
TGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACTCACGTTAAGGGATT
TTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATTAAAAATG
AAGTTTTAAATCAATCTAAAGTATATATGTGTAACATTGGTCTAGTGATTATTTGC
CGACTACCTTGGTGATCTCGCCTTTCACGTAGTGGACAAATTCTTCCAACTGATCT
GCGCGCGAGGCCAAGCGATCTTCTTCTTGTCCAAGATAAGCCTGTCTAGCTTCAAG
TATGACGGGCTGATACTGGGCCGGCAGGCGCTCCATTGCCCAGTCGGCAGCGACA
TCCTTCGGCGCGATTTTGCCGGTTACTGCGCTGTACCAAATGCGGGACAACGTAAG
CACTACATTTCGCTCATCACCAGCCCAGTCGGGCGGCGAGTTCCATAGCGTTAAGG
TTTCATTTAGCGCCTCAAATAGATCCTGTTCAGGAACCGGATCAAAGAGTTCCTCC
GCCGCTGGACCTACCAAGGCAACGCTATGTTCTCTTGCTTTTGTCAGCAAGATAGC
CAGATCAATGTCGATCGTGGCTGGCTCGAAGATACCTGCAAGAATGTCATTGCGCT
GCCATTCTCCAAATTGCAGTTCGCGCTTAGCTGGATAACGCCACGGAATGATGTCG

TCGTGCACAACAATGGTGACTTCTACAGCGCGGAGAATCTCGCTCTCTCCAGGGGA
AGCCGAAGTTTCCAAAAGGTCGTTGATCAAAGCTCGCCGCGTTGTTTCATCAAGCC
TTACGGTCACCGTAACCAGCAAATCAATATCACTGTGTGGCTTCAGGCCGCCATCC
ACTGCGGAGCCGTACAAATGTACGGCCAGCAACGTCGGTTCGAGATGGCGCTCGA
TGACGCCAACTACCTCTGATAGTTGAGTCGATACTTCGGCGATCACCGCTTCCCTC
ATGATGTTTAACTTTGTTTTAGGGCGACTGCCCTGCTGCGTAACATCGTTGCTGCT
CCATAACATCAAACATCGACCCACGGCGTAACGCGCTTGCTGCTTGGATGCCCGAG
GCATAGACTGTACCCCAAAAAAACAGTCATAACAAGCCATGAAAACCGCCACTGCG
CCGTTACCACCGCTGCGTTCGGTCAAGGTTCTGGACCAGTTGCGTGAGCGCATACG
CTACTTGCATTACAGCTTACGAACCGAACAGGCTTATGTCCACTGGGTTCGTGCCT
TCATCCGTTTCCACGGTGTGCGTCACCCGGCAACCTTGGGCAGCAGCGAAGTCGAG
GCATTTCTGTCCTGGCTGGAACACCCCTTGTATTACTGTTTATGTAAGCAGACAGT
TTTATTGTTCATGATGATATATTTTTATCTTGTGCAATGTAACATCAGAGATTTTG
AGACACAACGTGGCTTTGTTGAATAAATCGAACTTTTGCTGAGTTGAAGGATCAGA
TCACGCATCTTCCCGACAACGCAGACCGTTCCGTGGCAAAGCAAAAGTTCAAAATC
ACCAACTGGTCCACCTACAACAAAGCTCTCATCAACCGTGGCTCCCTCACTTTCTG
GCTGGATGATGGGGCGATTCAGGCGATCCCCATCCAACAGCCCGCCGTCGAGCGG
GCTTTTTTATCCCCGGAAGCCTGTGGATAGAGGG

pARKA1_o1:

CCTTGGCTTGTGGACAATGCGCTACGCGCACCGGCTCCGCCCGTGGACAACCGCAA
GCGGTTGCCCACCGTCGAGCGCCTTTGCCCACAACCCGGCGGCCGGCCGCAACAGA
TCGTTTTATAAATTTTTTTTTTTGAAAAAGAAAAAGCCCGAAAGGCGGCAACCTCT
CGGGCTTCTGGATTTCCGATCCCCGGAATTAGAGATCTTGGCAGGATATATTGTGG
TGTAACCCGAATTCCGTCTCAGGAGTACTAGACCTGTAGGATCGTACAGGTTTACG
CAAGAAAATGGTTTGTTATAGTCGAATAAATACTATTAAAGAGGAGAAATACTAG
AATGCGTAAAGGAGAAGAACTTTTCACTGGAGTTGTCCCAATTCTTGTTGAATTAG
ATGGTGATGTTAATGGGCACAAATTTTCTGTCAGTGGAGAGGGTGAAGGTGATGC
AACATACGGAAAACTTACCCTTAAATTTATTTGCACTACTGGAAAACTACCTGTTC
CATGGCCAACACTTGTCACTACTTTCGGTTATGGTGTTCAATGCTTTGCGAGATAC
CCAGATCATATGAAACAGCATGACTTTTTCAAGAGTGCCATGCCCGAAGGTTATGT
ACAGGAAAGAACTATATTTTTCAAAGATGACGGGAACTACAAGACACGTGCTGAA
GTCAAGTTTGAAGGTGATACCCTTGTTAATAGAATCGAGTTAAAAGGTATTGATTT
TAAAGAAGATGGAAACATTCTTGGACACAAATTGGAATACAACTATAACTCACACA
ATGTATACATCATGGCAGACAAACAAAAGAATGGAATCAAAGTTAACTTCAAAATT
AGACACAACATTGAAGATGGAAGCGTTCAACTAGCAGACCATTATCAACAAAATAC
TCCAATTGGCGATGGCCCTGTCCTTTTACCAGACAACCATTACCTGTCCACACAAT
CTGCCCTTTCGAAAGATCCCAACGAAAAGAGAGATCACATGGTCCTTCTTGAGTTT
GTAACAGCTGCTGGGATTACACATGGCATGGATGAACTATACAAATAATAAGCTTC
CAGGCATCAAATAAAACGAAAGGCTCAGTCGAAAGACTGGGCCTTTCGTTTTATCT
GTTGTTTGTCGGTGAACGCTCTCTACTAGAGTCACACTGGCTCACCTTCGGGTGGG
CCTTTCTGCGTTTATACGCTGTCAGGAGTTTACGGCTAGCTCAGTCCTAGGTATAG
TGCTAGCTACTATTAAAGAGGAGAAATACTAGAATGAAAAACATAAATGCCGACG
ACACATACAGAATAATTAATAAAATTAAAGCTTGTAGAAGCAATAATGATATTAAT
CAATGCTTATCTGATATGACTAAAATGGTACATTGTGAATATTATTTACTCGCGAT

CATTTATCCTCATTCTATGGTTAAATCTGATATTTCAATCCTAGATAATTACCCTA
AAAAATGGAGGCAATATTATGATGACGCTAATTTAATAAAATATGATCCTATAGTA
GATTATTCTAACTCCAATCATTCACCAATTAATTGGAATATATTTGAAAACAATGC
TGTAAATAAAAAATCTCCAAATGTAATTAAAGAAGCGAAAACATCAGGTCTTATCA
CTGGGTTTAGTTTCCCTATTCATACGGCTAACAATGGCTTCGGAATGCTTAGTTTT
GCACATTCAGAAAAAGACAACTATATAGATAGTTTATTTTTACATGCGTGTATGAA
CATACCATTAATTGTTCCTTCTCTAGTTGATAATTATCGAAAAATAAATATAGCAA
ATAATAAATCAAACAACGATTTAACCAAAAGAGAAAAAGAATGTTTAGCGTGGGC
ATGCGAAGGAAAAAGCTCTTGGGATATTTCAAAAATATTAGGTTGCAGTGAGCGT
ACTGTCACTTTCCATTTAACCAATGCGCAAATGAAACTCAATACAACAAACCGCTG
CCAAAGTATTTCTAAAGCAATTTTAACAGGAGCAATTGATTGCCCATACTTTAAAA
ATTAATAAGCTTCCAGGCATCAAATAAAACGAAAGGCTCAGTCGAAAGACTGGGCC
TTTCGTTTTATCTGTTGTTTGTCGGTGAACGCTCTCTACTAGAGTCACACTGGCTC
ACCTTCGGGTGGGCCTTTCTGCGTTTATACGCTGTCAGGAGTTTACGGCTAGCTCA
GTCCTAGGTATAGTGCTAGCTACTATTAAAGAGGAGAAATACTAGAATGACAATCA
TGATTAAGAAAAGCGATTTCTTAGCTATCCCGTCAGAAGAGTATAAAGGTATCCTG
AGCCTGCGTTATCAAGTCTTCAAACAGCGTCTGGAATGGGACTTGGTTGTGGAGA
ACAATCTTGAAAGCGACGAGTATGACAATTCAAATGCGGAGTACATTTACGCATGT
GACGATACTGAGAATGTTTCAGGATGTTGGCGTCTTTTACCGACGACCGGGGATT
ACATGCTGAAGTCGGTATTTCCCGAATTGTTAGGTCAACAATCCGCTCCGAAGGAC
CCGAACATCGTCGAACTTTCTCGTTTCGCGGTAGGGAAGAACAGCTCTAAAATTAA
CAATTCTGCCTCCGAGATCACGATGAAGCTGTTCGAGGCTATCTATAAGCATGCGG
TTTCGCAAGGTATTACGGAGTACGTAACTGTTACATCGACTGCCATCGAGCGTTTC
CTGAAACGTATCAAGGTGCCCTGTCACCGTATCGGTGATAAGGAAATCCATGTCTT
AGGAGATACAAAATCTGTAGTACTTTCCATGCCTATCAACGAACAGTTCAAAAAGG
CAGTATTAAACTAATAAGCTTCCAGGCATCAAATAAAACGAAAGGCTCAGTCGAAA
GACTGGGCCTTTCGTTTTATCTGTTGTTTGTCGGTGAACGCTCTCTACTAGAGTCA
CACTGGCTCACCTTCGGGTGGGCCTTTCTGCGTTTATACGCTGTCAGGAGTACTAG
ACCTGTAGGATCGTACAGGTTTACGCAAGAAAATGGTTTGTTATAGTCGAATAAAT
ACTTCACACAGGAAAGTACTAGAATGGTACGCTGGACTTTGTGGGATACCCTCGCT
TTCCTGCTCCTGTTGAGTTTATTGCTGCCGTCATTGCTTATTATGTTCATCCCGTC
AACATTCAAACGGCCTGTCTCATCATGGAAGGCGCTGAATTTACGGAAAACATTAT
TAATGGCGTCGAGCGTCCGGTTAAAGCCGCTGAATTGTTCGCGCTTACCTTGCGTG
TACGCGCAGGAAACACTGACGTTCTTGCTGACGCAGAAGAAAACGTGCGTCAAAA
ATTACGTGCAGAAGGAGTGAGCTTCCAGGCATCAAATAAAACGAAAGGCTCAGTC
GAAAGACTGGGCCTTTCGTTTTATCTGTTGTTTGTCGGTGAACGCTCTCTACTAGA
GTCACACTGGCTCACCTTCGGGTGGGCCTTTCTGCGTTTATACGCTGTCATGAGAC
GCTGCAGTGACAGGATATATTGGCGGGTAAACTAAGTCGCTGTATGTGTTTGTTT
GAGATCTCATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGC
GTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGAC
GCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCC
CCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACC
TGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGG
TATCTCAGTTCGGTGTAGGTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCC
CGTTCAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGG

TAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGC
GAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTAC
ACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAG
AAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTT
TTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTT
GATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACTCACGTTAAGGGATTT
TGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATTAAAAATGA
AGTTTTAAATCAATCTAAAGTATATATGTGTAACATTGGTCTAGTGATTAGAAAAA
CTCATCGAGCATCAAATGAAACTGCAATTTATTCATATCAGGATTATCAATACCAT
ATTTTTGAAAAAGCCGTTTCTGTAATGAAGGAGAAAACTCACCGAGGCAGTTCCAT
AGGATGGCAAGATCCTGGTATCGGTCTGCGATTCCGACTCGTCCAACATCAATACA
ACCTATTAATTTCCCCTCGTCAAAAATAAGGTTATCAAGTGAGAAATCACCATGAG
TGACGACTGAATCCGGTGAGAATGGCAAAAGTTTATGCATTTCTTTCCAGACTTGT
TCAACAGGCCAGCCATTACGCTCGTCATCAAAATCACTCGCATCAACCAAACCGTT
ATTCATTCGTGATTGCGCCTGAGCGAGTCGAAATACGCGATCGCTGTTAAAAGGAC
AATTACAAACAGGAATCGAATGCAACCGGCGCAGGAACACTGCCAGCGCATCAACA
ATATTTTCACCTGAATCAGGATATTCTTCTAATACCTGGAATGCTGTTTTCCCTGG
GATCGCAGTGGTGAGTAACCATGCATCATCAGGAGTACGGATAAAATGCTTGATG
GTCGGAAGAGGCATAAATTCCGTCAGCCAGTTTAGTCTGACCATCTCATCTGTAAC
AACATTGGCAACGCTACCTTTGCCATGTTTCAGAAACAACTCTGGCGCATCGGGCT
TCCCATACAATCGGTAGATTGTCGCACCTGATTGCCCGACATTATCGCGAGCCCAT
TTATACCCATATAAATCAGCATCCATGTTGGAATTTAATCGCGGCCTTGAGCAAGA
CGTTTCCCGTTGAATATGGCTCATAACACCCCTTGTATTACTGTTTATGTAAGCAG
ACAGTTTTATTGTTCATGATGATATATTTTTATCTTGTGCAATGTAACATCAGAGA
TTTTGAGACACAACGTGGCTTTGTTGAATAAATCGAACTTTTGCTGAGTTGAAGGA
TCAGATCACGCATCTTCCCGACAACGCAGACCGTTCCGTGGCAAAGCAAAAGTTCA
AAATCACCAACTGGTCCACCTACAACAAAGCTCTCATCAACCGTGGCTCCCTCACT
TTCTGGCTGGATGATGGGGCGATTCAGGCGATCCCCATCCAACAGCCCGCCGTCGA
GCGGGCTTTTTTATCCCCGGAAGCCTGTGGATAGAGGGTAGTTATCCACGTGAAA
CCGCTAATGCCCCGCAAAGCCTTGATTCACGGGGCTTTCCGGCCCGCTCCAAAAAC
TATCCACGTGAAATCGCTAATCAGGGTACGTGAAATCGCTAATCGGAGTACGTGAA
ATCGCTAATAAGGTCACGTGAAATCGCTAATCAAAAAGGCACGTGAGAACGCTAAT
AGCCCTTTCAGATCAACAGCTTGCAAACACCCCTCGCTCCGGCAAGTAGTTACAGC
AAGTAGTATGTTCAATTAGCTTTTCAATTATGAATATATATATCAATTATTGGTCG
C

Appendix II: Reactions of the designed genetic circuit model

LuxR

$$\emptyset \xrightarrow{k_{R1}} \text{mLuxR} \tag{1}$$

$$\text{mLuxR} \xrightarrow{k_{R2}} \text{mLuxR} + \text{LuxR} \tag{2}$$

$$\text{mLuxR} \xrightarrow{k_{R3}} \emptyset \tag{3}$$

$$\text{LuxR} \xrightarrow{k_{R4}} \emptyset \tag{4}$$

Where (1) is the transcription of the LuxR mRNA, (2) is the translation of LuxR, (3) is the degradation of the LuxR mRNA and (4) is the degradation of the LuxR protein.

LuxI

$$\emptyset \xrightarrow{k_{I1}} \text{mLuxI} \tag{5}$$

$$\text{mLuxI} \xrightarrow{k_{I2}} \text{mLuxI} + \text{LuxI} \tag{6}$$

$$\text{mLuxI} \xrightarrow{k_{I3}} \emptyset \tag{7}$$

$$\text{LuxI} \xrightarrow{k_{I4}} \emptyset \tag{8}$$

Where (5) is the transcription of the LuxI mRNA, (6) is the translation of LuxI, (7) is the degradation of the LuxI mRNA and (8) is the degradation of the LuxI protein.

AHL

$$\mathrm{LuxI} \xrightarrow{k_{A1}} \mathrm{LuxI} + \mathrm{AHL_i} \tag{9}$$

$$\mathrm{AHL_i} \underset{k_{A2}*Vc}{\overset{k_{A2}}{\rightleftharpoons}} \mathrm{AHL_e} \tag{10}$$

$$\mathrm{AHL_i} \xrightarrow{k_{A3}} \emptyset \tag{11}$$

$$\mathrm{AHL_e} \xrightarrow{k_{A4}} \emptyset \tag{12}$$

Where (9) is the synthesis of AHL by the LuxI protein, (10) is the diffusion of AHL between the cell and the medium, (11) is the degradation of the intracellular AHL and (12) is the degradation of the extracellular AHL. It is important to note that $\mathrm{AHL_e}$ is a species that is in the culture medium and not inside the cell, so this will have to be taken into account in the differential equation that defines its temporal evolution.

Transcription factor

$$\mathrm{LuxR} + \mathrm{AHL_i} \underset{k_{T-1}}{\overset{k_{T1}}{\rightleftharpoons}} \mathrm{LuxRAHL} \tag{13}$$

$$2\,\mathrm{LuxRAHL} \underset{k_{T-2}}{\overset{k_{T2}}{\rightleftharpoons}} \mathrm{TF} \tag{14}$$

$$\mathrm{LuxRAHL} \xrightarrow{k_{T3}} \emptyset \tag{15}$$

$$\mathrm{TF} \xrightarrow{k_{T4}} \emptyset \tag{16}$$

Where (13) is the association of AHL with LuxR, (14) is the dimerization of LuxRAHL, forming the transcription factor, (15) is the degradation of LuxRAHL and (16) is the degradation of the transcription factor.

GFP

$$\emptyset \xrightarrow{\text{f(TF)}} \text{mGFP} \tag{17}$$

$$\text{TF} \xrightarrow{\text{f(TF)}} \text{TF} + \text{mGFP} \tag{18}$$

$$\text{mGFP} \xrightarrow{\text{k}_{\text{G3}}} \text{mGFP} + \text{GFP} \tag{19}$$

$$\text{mGFP} \xrightarrow{\text{k}_{\text{G4}}} \emptyset \tag{20}$$

$$\text{GFP} \xrightarrow{\text{k}_{\text{G5}}} \emptyset \tag{21}$$

Where (17) is the constitutive transcription of the GFP mRNA, (18) is the induced transcription of the GFP mRNA due to the association of the transcription factor to the DNA, (19) is the translation of the GFP, (20) is the degradation of the GFP mRNA and (21) is the degradation of the GFP.

E-lysis protein

$$\emptyset \xrightarrow{\text{f(TF)}} \text{mE} \tag{22}$$

$$\text{TF} \xrightarrow{\text{f(TF)}} \text{TF} + \text{mE} \tag{23}$$

$$\text{mE} \xrightarrow{\text{k}_{\text{E3}}} \text{E} \tag{24}$$

$$\text{mE} \xrightarrow{\text{k}_{\text{E4}}} \emptyset \tag{25}$$

$$\text{E} \xrightarrow{\text{k}_{\text{E5}}} \emptyset \tag{26}$$

Where (22) is the constitutive transcription of the E-lysis protein mRNA, (23) is the induced transcription of the E-lysis protein mRNA due to the association of the transcription factor to the DNA, (24) is the translation of the E-lysis protein, (25) is the degradation of the E-lysis protein mRNA and (26) is the degradation of the E-lysis protein.

Appendix III: Models used in DNA basic parts characterization

Characterization of the interaction of LuxR with the pLux promoter

$$\frac{dX}{dt} = \mu X - \frac{\mu X^2}{K_{\mathrm{mx}}} \tag{27}$$

$$\frac{d[mLuxR]}{dt} = k_{\mathrm{R1}} - (k_{\mathrm{R3}} + \mu)[mLuxR] \tag{28}$$

$$\frac{d[LuxR]}{dt} = k_{\mathrm{R2}}[mLuxR] - k_{\mathrm{T1}}[LuxR][AHL_i] + k_{\text{T-1}}[LuxRAHL] - (k_{\mathrm{R4}} + \mu)[LuxR] \tag{29}$$

$$\frac{d[AHL_i]}{dt} = k_{\mathrm{A2}}Vc[AHL_e] - k_{\mathrm{T1}}[LuxR][AHLi] + k_{\text{T-1}}[LuxRAHL] - (k_{\mathrm{A2}} + k_{\mathrm{A3}} + \mu)[AHL_i] \tag{30}$$

$$\frac{d[AHL_e]}{dt} = k_{\mathrm{A2}}[AHL_i] - X(k_{\mathrm{A2}}Vc[AHL_e]) - k_{\mathrm{A4}}[AHL_e] \tag{31}$$

$$\frac{d[LuxRAHL]}{dt} = k_{\mathrm{T1}}[LuxR][AHL_i] - k_{\text{T-1}}[LuxRAHL] - 2k_{\mathrm{T2}}[LuxRAHL]^2 + 2k_{\text{T-2}}[TF] - (k_{\mathrm{T3}} + \mu)[LuxRAHL] \tag{32}$$

$$\frac{d[TF]}{dt} = k_{\mathrm{T2}}[LuxRAHL]^2 - k_{\text{T-2}}[TF] - (k_{\mathrm{T4}} + \mu)[TF] \tag{33}$$

$$\frac{d[mGFP]}{dt} = k_{\mathrm{G1}}CN_g\frac{[TF]}{[TF] + k_{\mathrm{G2}}} + \alpha_g\frac{k_{\mathrm{G2}}}{[TF] + k_{\mathrm{G2}}} - (k_{\mathrm{G4}} + \mu)[mGFP] \tag{34}$$

$$\frac{d[GFP]}{dt} = k_{\mathrm{G3}}[mGFP] - (k_{\mathrm{G5}} + \mu)[GFP] \tag{35}$$

Where (27) is the temporal evolution of the biomass (number of cells), (28) is the temporal evolution of the amount of the LuxR mRNA, (29) is the temporal evolution of the amount of the LuxR protein, (30) is the temporal evolution of the intracellular AHL, (31) is the temporal evolution of extracellular AHL, (32) is the temporal evolution of the heterodimer LuxR-AHL, (33) is the temporal evolution of the transcription factor, (34) is the temporal evolution of the GFP mRNA, (35) is the temporal evolution of the GFP. The concentration of all species is expressed in nM, which inside the cell is equivalent to molecules/cell (Boada Acosta, 2018).

Characterization of the lethality of E-lysis protein

$$\frac{dX}{dt} = \mu X - \frac{\mu X^2}{K_{\mathrm{mx}}} - \frac{K_{me}[E]^n}{\Theta^n + [E]^n} X \tag{36}$$

$$\frac{d[mLuxR]}{dt} = k_{\mathrm{R1}} - (k_{\mathrm{R3}} + \mu)[mLuxR] \tag{37}$$

$$\frac{d[LuxR]}{dt} = k_{\mathrm{R2}}[mLuxR] - k_{\mathrm{T1}}[LuxR][AHL_i] + k_{\mathrm{T\text{-}1}}[LuxRAHL] - (k_{\mathrm{R4}} + \mu)[LuxR] \tag{38}$$

$$\frac{d[AHL_i]}{dt} = k_{\mathrm{A2}} Vc[AHL_e] - k_{\mathrm{T1}}[LuxR][AHLi] + k_{\mathrm{T\text{-}1}}[LuxRAHL] - (k_{\mathrm{A2}} + k_{\mathrm{A3}} + \mu)[AHL_i] \tag{39}$$

$$\frac{d[AHL_e]}{dt} = k_{\mathrm{A2}}[AHL_i] - X(k_{\mathrm{A2}} Vc[AHL_e]) - k_{\mathrm{A4}}[AHL_e] \tag{40}$$

$$\frac{d[LuxRAHL]}{dt} = k_{\mathrm{T1}}[LuxR][AHL_i] - k_{\mathrm{T\text{-}1}}[LuxRAHL] - 2k_{\mathrm{T2}}[LuxRAHL]^2 + 2k_{\mathrm{T\text{-}2}}[TF] - (k_{\mathrm{T3}} + \mu)[LuxRAHL] \tag{41}$$

$$\frac{d[TF]}{dt} = k_{\mathrm{T2}}[LuxRAHL]^2 - k_{\mathrm{T\text{-}2}}[TF] - (k_{\mathrm{T4}} + \mu)[TF] \tag{42}$$

$$\frac{d[E]}{dt} = k_{\mathrm{G1}} CN_e \frac{[TF]}{[TF] + k_{\mathrm{G2}}} + \alpha_g \frac{k_{\mathrm{G2}}}{[TF] + k_{\mathrm{G2}}} - (k_{\mathrm{G4}} + \mu)[mE] \tag{43}$$

$$\frac{d[E]}{dt} = k_{\mathrm{G3}}[mE] - (k_{\mathrm{G5}} + \mu)[E] \tag{44}$$

Where (36) is the temporal evolution of the biomass (number of cells), (37) is the temporal evolution of the amount of the LuxR mRNA, (29) is the temporal evolution of the amount of the LuxR protein, (39) is the temporal evolution of the intracellular AHL, (40) is the temporal evolution of extracellular AHL, (41) is the temporal evolution of the heterodimer LuxR-AHL, (42) is the temporal evolution of the transcription factor, (43) is the temporal evolution of the E-lysis protein mRNA, (44) is the temporal evolution of the E-lysis protein. The concentration of all species is expressed in nM, which inside the cell is equivalent to molecules/cell (Boada Acosta, 2018).