

Blue-white screening as a new readout for deoxyribozyme activity in bacterial cells

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Supplementary data

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Supplementary figure SII... Cyan color example in some colonies after to IPTG-X-Gal spray.

Supplementary figure SIII... The evolution of blue color in control and MS colonies. The columns show cyan percentage prior to normalization.

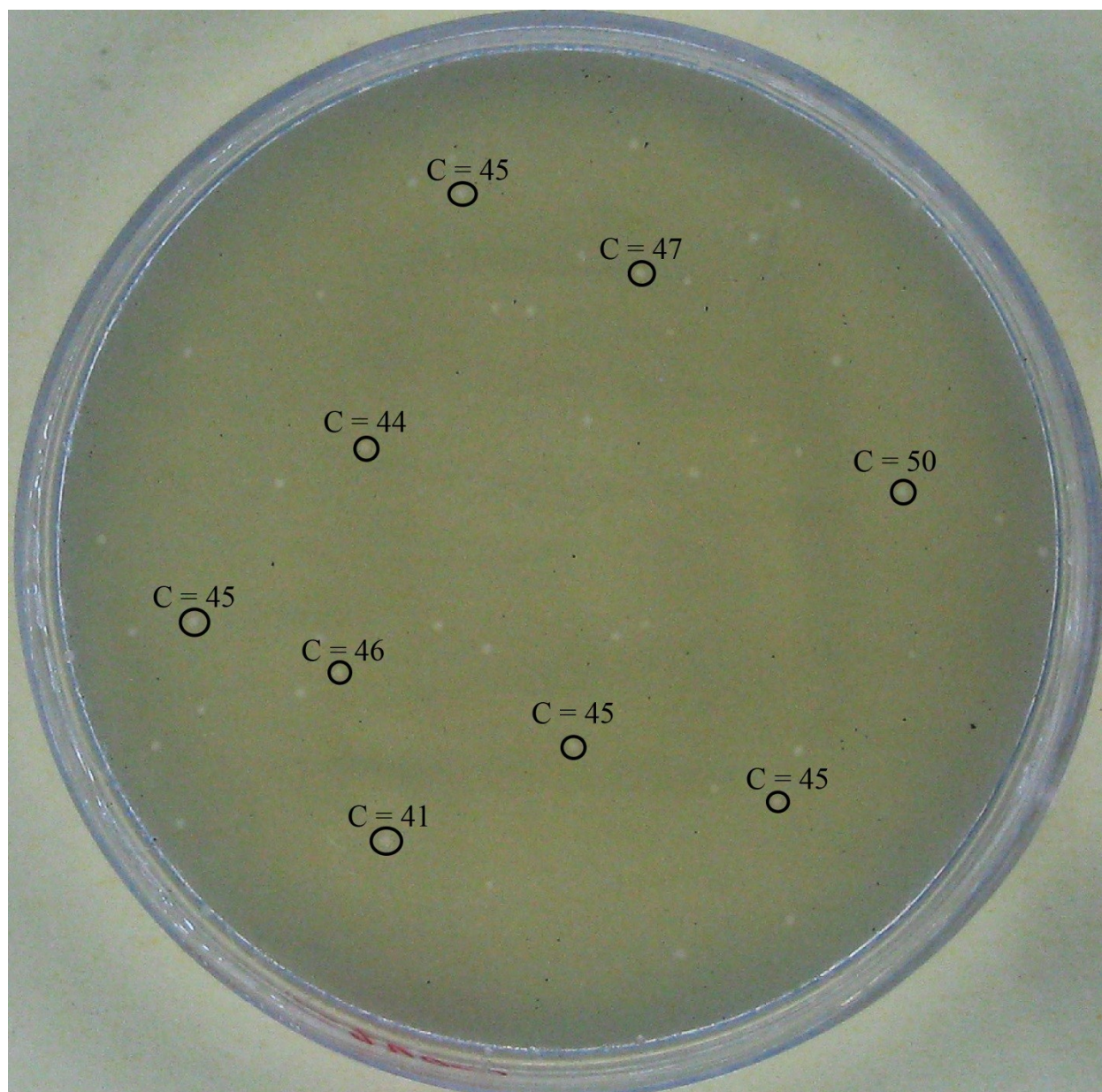
Supplementary figure SIV... Photos of the agar plates 0.5, 1.5 and 12 h after IPTG-X-Gal spray. Full plate images of the figure 3A.

appendix SI..... pGEM-T vector sequence assignment and the final transcript of α -peptide

appendix SII..... The final transcript of α -peptide

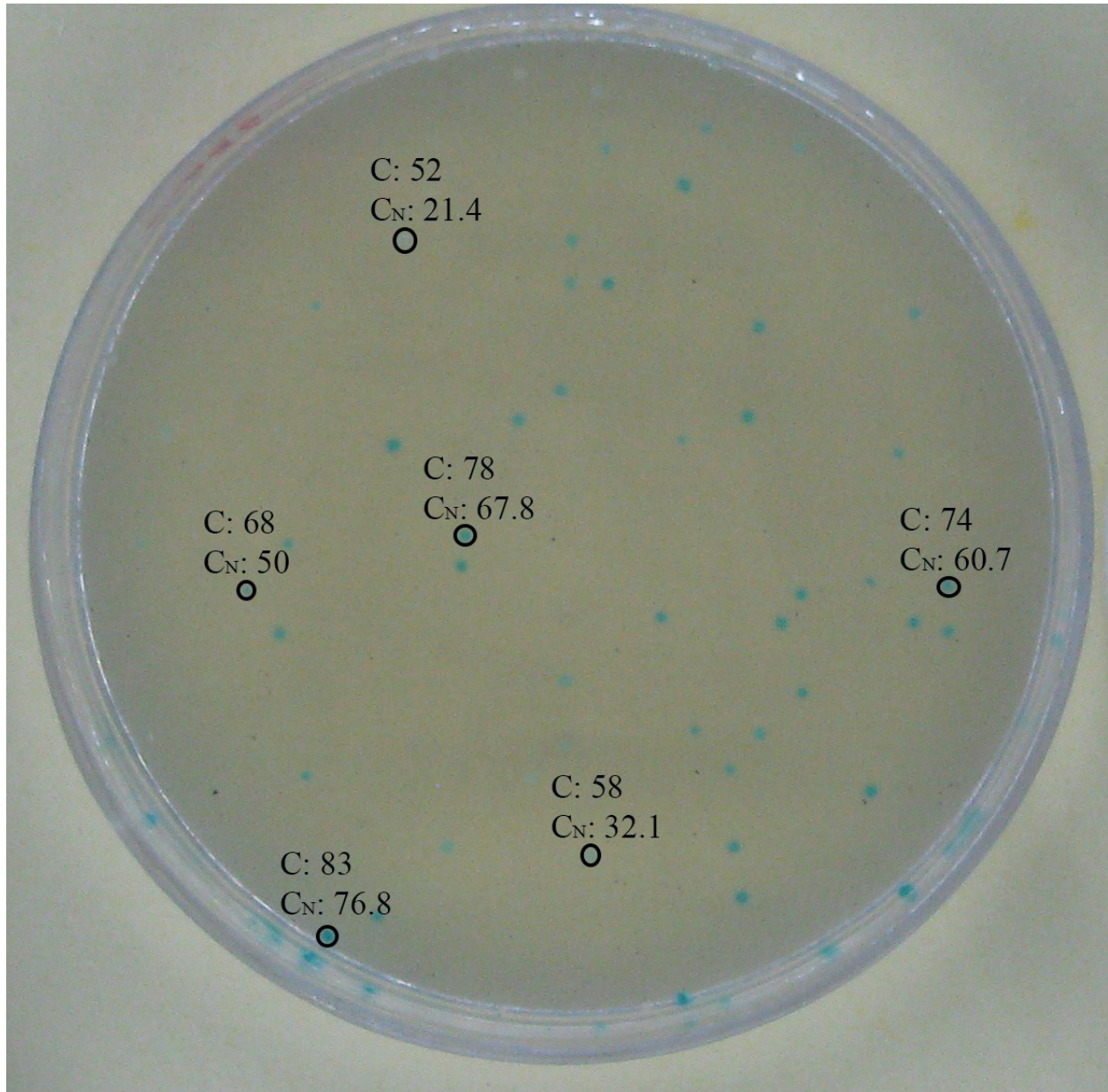
appendix SIII..... The sequence of the pGEM-T vector α -peptide fragment

Supplementary Fig. S1



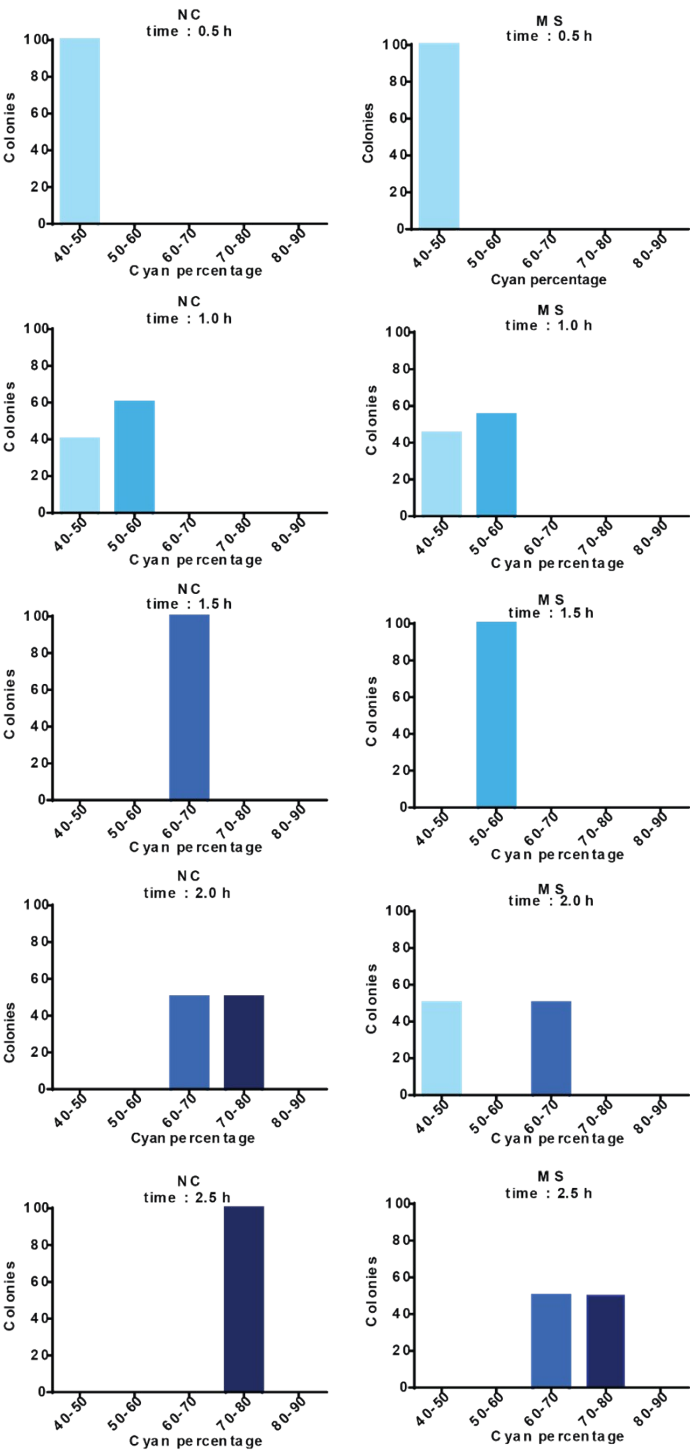
Supplementary Fig. SII

Fig. SII The cyan value and normalized cyan value of some exemplary colonies in CMYK system, analyzed by adobe Photoshop CC2014. "C" represents raw cyan percentage, prior to background correction and normalization. " C_N " represents the normalized cyan percentage. For normalization, the " $C_{\text{background}}$ " was deducted from the raw C % and then the data were normalized in the scale of 0-100. The minimal percentage of "C" values of un-induced plate (Shown in figure SI) was taken as the " $C_{\text{background}}$ ".



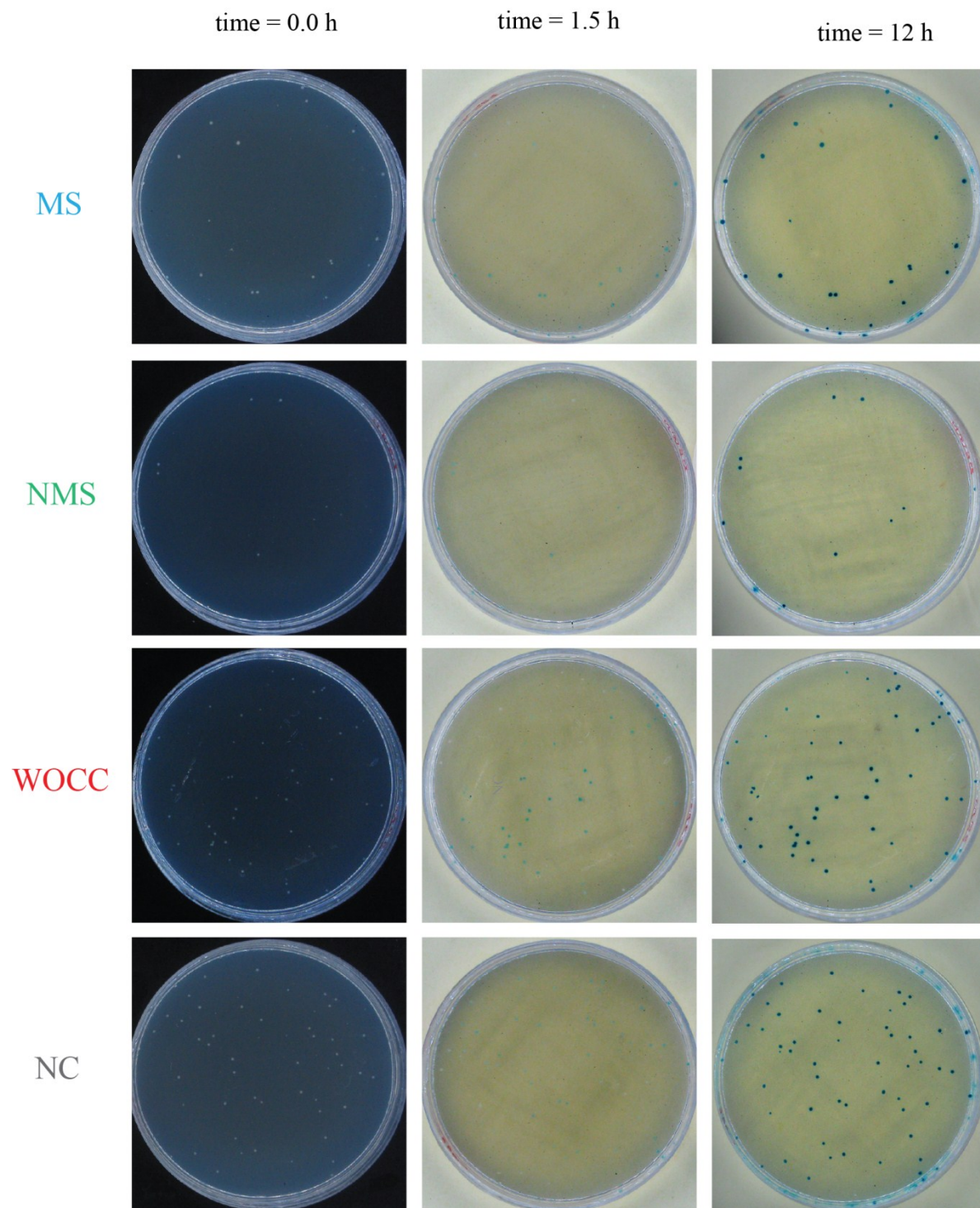
Supplementary Fig. SIII

The evolution of blue color in control and MS colonies. The columns show cyan percentage prior to normalization.



Supplementary Fig. SIV

Photos of the example agar plates 0.5, 1.5 and 12 h after IPTG-X-Gal spray. These plates are full plate images of figure 3A.



Appendix SI. pGEM-T vector sequence assignment and the final transcript of α -peptide:

pGEM-T vector>

GGGCGAATTGGGCCCGACGTCGCATGCTCCCGGCCGCGCATGGCCGCGGGATATCACTAGTGC GGCCGCTGCAG
GTCGACCATATGGGAGAGCTCCCAACGCGTTGGATGCATAGCTTGAGTATTCTATAGTGTACCTAAATAGCTTG
GCGTAATCATGGT CAT AGCTGTTTCCTGTGTGAAATTGTTATCCGCT CACAATTCCACAC AACATACGAGCCGGAA
GCATAAAGTGTAAA GCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCCGCTTT
CCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGCGCGGGGAGAGGCGGTTTGC GTATTG
GGCGCTCTTCCGCTTCCTCGCTCACTGACTCGCTGCGCTCGGTGCTTCGGCTGCGGCGAGCGGTATCAGCTCACTC
AAAGGCGGTAATACGTTATCCACAGAATCAGGGGATAACGCAGGAAAGAACATGTGAGCAAAAGGCCAGCAAA
AGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCAGAAAA
ATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTTCCCCCTGGAAGCTCCC
TCGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTT
TCTCATAGCTCACGCTGTAGGTATCTCAGTTCCGTTGAGGTGCTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCC
CCGTTACAGCCGACCGCTGCGCCTTATCCGGTAACATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCC
ACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGT
GGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAG
AGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTGCAAGCAGCAGATTACG
CGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACCTCAC
GTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATTAATAAATGAAGTTTTAA
TCAATCTAAAGTATATATGAGTAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGAT
CTGTCTATTTGTTTCATCCATAGTTGCCTGACTCCCCGCTGTGTAGATAACTACGATACGGGAGGGCTTACCATCTG
GCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCACC GGCTCCAGATTTATCAGCAATAAACCCAGCCAGCCG
GAAGGGCCGAGCGCAGAAAGTGGTCCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGCCGGGAAGCTAG
AGTAAGTAGTTTCGCCAGTTAATAGTTTGC GCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACGCTCGTCG
TTTGGTATGGCTTCATTAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAAG
CGGTTAGCTCCTTCGGTCTCCGATCGTTGTGAGAAGTAAGTTGGCCGCACTGTTATCACTCATGGTTATGGCAGC
ACTGCATAATTCTTACTGTATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTG
AGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGCGTCAATACGGGATAATACCGCGCCACATAGCAGAAC
TTTAAAAGTGCTCATCATTGGAAAACGTTCTTCGGGGCGAAAACCTCTCAAGGATCTTACCGCTGTTGAGATCCAGT
TCGATGTAACCCACTCGTGCAACCACTGATCTTCAGCATCTTTTACTTTCACCAGCGTTTCTGGGTGAGCAAAAAAC
AGGAAGGC AAAATGCCGCAAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCCTTTTCA
ATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACATATTTGAATGTATTTAGAAAAATAACAAA
TAGGGGTTCCGCGCACATTTCCCCGAAAAGTGCCACCTGATGCGGTGTGAAATACCGCACAGATGCGTAAGGAGA
AAATACCGCATCAGGAAATTGTAAGCGTTAATATTTTGTTAAAAATTCGCGTTAAATTTTGTAAATCAGCTCATTTT
TTAACCAATAGGCCGAAATCGGCAAAATCCCTTATAAATCAAAGAATAGACCGAGATAGGGTTGAGTGTGTTCC
AGTTTGGAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGAAAAACCGTCTATCAGGGCGA
TGGCCCACTACGTGAACCATCACCTAATCAAGTTTTTTGGGGTCGAGGTGCCGTAAAGCACTAAATCGGAACCTT
AAAGGGAGCCCCGATTTAGAGCTTGACGGGGAAAGCCGGCGAACGTGGCGAGAAAGGAAGGGAAGAAAGCG
AAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCGGTCACGCTGCGCGTAACCACCACACCCGCCGCGCTTAA
TGCGCCGCTACAGGGCGCGTCCATTCGCCATT CAGGCTGCGCAACTGTTGGGAAGGGCGATCGGTGCGGGCCTCT

TCGCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTGCAAGGCGATTAAGTTGGGTAACGCCAGGGTTTTCCAG
TCACGACGTTGTAAACGACGGCCAGTGAATTGTAATACGACTCACTATA

The color code for the above sequences are as follows:

Position number	description	Color code
1	First nucleotide in the FASTA sequence of the plasmid	Highlighted-gray
1-95	palindromic sequences of restriction enzyme sites, multiple cloning site	underlined-red
162-165	The template for first AUG, encoding for first methionin	Highlighted green
96-196	SP6 and m13 primer binding sites for sequencing	underlined-orange-bold
210-239	lacZ promoter, reverse orientation	highlighted-yellow
239-2979	Miscellaneous containing amp resistance, etc.	brown
2980-2832	a-peptide coding sequence	blue
3000	last nucleotide in the FASTA sequence of the plasmid	highlighted-cyan

Indeed since the vector is circular the sequence can be re-written as follows (the same color codes as above are valid for this part):

.....GCTACAGGGCGCGTCCATTCGCCATTCAGGCTGCGCAACTGTTGGGAAGGGCGATCGGTGCGGGCCTCTTCG
TATTACGCCAGCTGGCGAAAGGGGGATGTGCTGCAAGGCGATTAAGTTGGGTAACGCCAGGGTTTTCCAGTCAC
GACGTTGTAAACGACGGCCAGTGAATTGTAATACGACTCACTATAGGCGAATTGGGCCCGACGTCGCATGCTC
CCGGCCGCCATGGCCGCGGGATATCACTAGTGCGGCCGCTGCAGGTCGACCATATGGGAGAGCTCCAACGCG
TGGATGCATAGCTTGAGTATTCTATAGTGTCACCTAAATAGCTTGGCGTAATCATGGTCATAGCTGTTTCTGTG
TGAAATTGTTATCCGCTCACAATTCCACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGT.....

Appendix SII. The final transcript of α -peptide:

Since the promoter is in the reversed orientation the transcript mRNA for α -peptide has the following sequence. The color codes are as depicted in SI.

GUGUGGAAUUGUGAGCGGAUAACAAUUUCACACAGGAAACAGCUAUGACCAUGAUUACGCCAAGCUAUUUA
GGUGACACUAUAGAAUACUCAAGCUAUGCAUCCAACGCGUUGGGAGCUCUCCCAUAUGGUCGACCUGCAGG
CGGCCGCACUAGUGAUAUCCCGCGGCCAUGGCGGCCGGGAGCAUGCGACGUCGGGCCCAAUUCGCCCUAUAAG
UGAGUCGUAUUACAAUUCACUGGCCGUCGUUUUACAACGUCGUGACUGGGAAAACCCUGGCGUUACCCAAC
UUAUUCGCCUUGCAGCACAUCCCCUUUCGCCAGCUGGCGUAAUAGCGAAGAGGCCCGCACCGAUCGCCCUU
CCCAACAGUUGCGCAGCCUGA

Appendix SIII. The sequence of the pGEM-T vector α -peptide fragment

“SLAVVLQRRDWENPGVTQLNRLAAHPPFASWRNSEEARTDRPSQQLRSL”