

Table S1. Sequence of DHFR and ALP derived from *E. coli* genome

Name	Amino acid sequence ^{*1}	Nucleotide sequence ^{*2, 3}
DHFR	MISLIAALAVDRVIGMENAMPWNLPADLAWFKRNTLNKPVIMGRHTW ESIGRPLPGRKNIILSSQPGTDDRVTWVKSVDIAAACGDVPEIMVI GGGRVYEQFLPKAQKLYLTHIDAEVEGDTHFPDYEPDDWESVFSEFH DADAQNSHSYCFEILERR	<u>gaaattaatac</u> <u>gactcactatagggagaccacaacggtttccctctagaaataattttgtttaactttaagaaggagata</u> <u>tacca</u> ATGATCAGTCTGATTGCGGCGTTAGCGGTAGATCGCGTTATCGGCATGGAACGCCATGCCGTGGAACCTGCCTGCCGATCTCG CCTGGTTTAAACGCAACACCTTAAATAAACCCGTGATTATGGGCCGCCATACCTGGGAATCAATCGGTCGTCGTTGCCAGGACG CAAAAATATTATCCTCAGCAGTCAACCGGGTACGGACGATCGCGTAACGTGGGTGAAGTCGGTGGATGAAGCCATCGCGGCGTGT GGTGACGTACCAGAAATCATGGTGATTGGCGGCGGTGCGGTTTATGAACAGTTCTTGCCAAAAGCGCAAAACTGTATCTGACGC ATATCGACGCAGAAGTGAAGGCGACACCCA <u>CTTTCCG</u> GATTACGAGCCGGATGACTGGGAATCGGTATTAGCGAATTCACGA TGCTGATGCGCAGAACTCTCACAGCTATTGCTTTGAGATTCTGGAGCGGCGGtaatgaataactaatcc
ALP	MRTPEMPVLENRAAQGDITAPGGARRLTGDQTAALRDSLSDKPAKNI ILLIGDGMGDSEITAARNYAEGAGGFFKGIDALPLTGQYTHYALNKK TGKPDYVTDASAATAWSTGVKTYNGALGVDIHEKDHPTILEMAKAA GLATGNVSTAELQDATPAALVAHVTSRKCYGPSATSEKCPGNALEKG GKGSITEQLLNARADVTLGGGAKTFAETATAGEWQKTLREQAARG YQLVSDAASLNSVTEANQKPLLGLFADGNMPVRWLGPATYHGNID KPAVTCPTNPQRNDSVPTLAQMTDKAIELLSKNEKGFFLQVEGASID KQDHAANPCGQIGETVDLDEAVQRALEFAKKEGNTLVIVTADHAHAS QIVAPDTKAPGLTQALNTKDGAVMVMSYGNSEEDSQEHTGSQRLIAA YGPAAANVVGLTDQTDLFYTMKAALGLK	<u>gaaattaatac</u> <u>gactcactatagggagaccacaacggtttccctctagaaataattttgtttaactttaagaaggagata</u> <u>tacca</u> ATGCGGACACCAGAAATGCCTGTTCTGGAACCGGGCTGCTCAGGCGCATATTACTGCACCCGGCGGTGCTCGCCGTTAACGG GTGATCAGACTGCCGCTCTGCGTGATTCTCTTAGCGATAAACCTGCAAAAAATATTATTTGCTGATTGGCGATGGGATGGGGGA CTCGAAATTACTGCCGCACGTAATTATGCCGAAGGTGCGGCGGCTTTTTAAAGGTATAGATGCCTTACCGCTTACCGGGCAA TACACTCACTATGCGCTGAATAAAAAAACCGCAAACCGACTACGTCACCGACTCGGCTGCATCAGCAACCGCTGGTCAACCG GTGTCAAACTATAACGGCGCGCTGGGCGTCGATATTCAGAAAAAGATCACCAACGATTCTGGAAATGGCAAAAGCGCAGG TCTGGCGACCGGTAACGTTTCTACCGCAGAGTTGCAGGATGCCACGCCGCTGCGCTGGTGGCACATGTGACCTCGCGCAATGC TACGGTCCGAGCGCGACAGTGAAAAATGTCCGGGTAACGCTCTGAAAAAGGCGGAAAGGATCGATTACCGAACAGCTGCTTA ACGCTCGTGCCGACGTTACGCTTGGCGGCGCGCAAAACCTTTGCTGAAACGGCAACCGCTGGTGAATGGCAGGGAAAAACGCT GCGTGAACAGGCACAGGCGCGTGTTATCAGTTGGTGAGCGATGCTGCCTCACTGAATTCCGTGACGGAAGCGAATCAGCAAAAA CCCCTGCTTGGCTGTTTGTGACGGCAATATGCCAGTGCGCTGGCTAGGACCGAAAGCAACGTACCATGGCAATATCGATAAGC CCGCAGTACCTGTACGCCAAATCCGCAACGTAATGACAGTGTACCAACCCTGGCGCAGATGACCGACAAAGCCATTGAATTGTT GAGTAAAAATGAGAAAGGCTTTTCTGCAAGTTGAAGGTGCGTCAATCGATAAACAGGATCATGCTGCGAATCCTTGTGGGCAA ATTGGCGAGACGGTCGATCTCGATGAAGCCGTACAACGGGCGCTGGAATTCGCTAAAAAGGAGGGTAACACGCTGGTCATAGTCA CCGCTGATCACGCCACGCCAGCAGATTGTTGCGCCGGATACCAAGCTCCGGGCCTCACCAGGCGCTAAATACCAAGATGG CGCAGTGATGGTGATGAGTTACGGGAACCCGAAGAGGATTACAAGAACATACCGGCAGTCAGTTGCGTATTGCGGCGTATGGC CCGCATGCCGCCAATGTTGTTGGACTGACCGACAGACCGATCTCTTACACCATGAAAGCCGCTCTGGGGCTGAAataatgaa taactaatcc

1. For ALP, only the mature region was used.

2. ORFs are shown by uppercase. T7 promoter and SD sequence are underlined and double-lined, respectively.

3 For DHFR, a slippery sequence (TTTCCCG) at position 372 was substituted with CTTTCCG indicated by red letters..

Table S2. Sequence of sfGFP and Luc

Name	Amino acid sequence	Nucleotide sequence ^{*1}
sfGFP	MSKGEELFTGVVPILVELDGDVNGHKFSVRGEGEGDATNGKLTCLKFI CTTGKLPVPWPTLVTTLTYGVCFSRYPDHMKRHDFFKSAMPEGYVQ ERTISFKDDGTYKTRAEVKFEGDTLVNRIELKGIDFKEDGNILGHKL EYNFNSHNVYITADKQKNGIKANFKIRHNVEDGSVQLADHYQQNTPI GDGPVLLPDNHYLSTQSVLSKDPNEKRDMVLLEFVTAAGITHGMD LYK	<u>gaaattaatac</u> <u>gactcactatagggagaccacaacggtttccctctagaaataat</u> <u>tttg</u> <u>ttaactttaagaaggagata</u> <u>tacca</u> ATGTCTAAAGGTGAAGAATTATTTACTGGTGTGTGCCGATCCTGGTCGAACGGACGGTGATGTGAATGGGCATAAATTCCTGG TTCGGGGCGAAGGAGAGGGTGACGCAACTAACGGCAAACCTACCTCAAGTTTATTTGTACCACAGGTAACTGCCAGTCCCGTG GCCCACGCTGGTGACCACTTTGACCTACGGCGTACAGTGCTTCAGCCGCTATCCGGATCACATGAAACGTCATGATttcTTCAA TCAGCGATGCCTGAAGGGTATGTTCAGGAACGCACGATTAGCTTTAAAGACGATGGCACCTACAAGACACGTGCCGAGGTGAAAT TTGAAGGTGATACGTTAGTCAATCGCATCGAACTGAAAGGCATTGACTTCAAAGAGGATGGAACATCCTGGGTCATAAGCTGGA ATATAACTTTAATTCACAACTGTACATTACCGCTGACAAACAaagAATGGCATCAAAGCGAACTTCAAGATTCGTCATAAT GTTGAAGATGGGTCCGTACAGCTTGACAGTACTATCAGCAAACTCCGATCGGTGACGGCCAGTGCTCCTGCCGGATAATC ATTACTTGAGTACCCAGTCGGTCTTAAGCAAAGATCCGAACGAGAAACGCGACCATGTTCTGCTGGAATTTGTGACGGCCG GGGTATTACCCATGGCATGGATGAACTGTATAAAtaatgaataactaatcc
Luc	MEDAKNIKKGPAPFYPLEDGTAGEQLHKAMKRYALVPGTIAFTDAHI EVNITYAEYFEMSVRLAEAMKRYGLNTNHRIVVCSENSLQFFMPVLG ALFIGVAVAPANDIYNERELLNSMNI SQPTVVFSKKGLQKILNVQK KLPIIQKIIIMDSKTDYQGFQSMYTFVTSHLPPGFNEYDFVPESFDR DKTIALIMNSSGSTGLPKGVALPHRTACVRFSHARDPIFGNQIIPDT AILSVPFHHGFGMFTTLGYLICGFRVVLMYRFEELFLRSLQDYKI QSALLVPTLFSFFAKSTLIDKYDLSNLHEIASGGAPLSKEVGEAVAK RFHLPGIRQGYGLTETTSAILITPEGDDKPGAVGVVPPFEAKVVDL DTGKTLGVNQRGELCVRGPMIMSGYVNNPEATNALIDKDWLHSGDI AYWDEDEHFFIVDRLKSLIKYKGYQVAPAELESILLQHPNIFDAGVA GLPDDDAGELPAVVVLEHGKTMTEKEIVDYVASQVTTAKKLRGVV FVDEVPKGLTGKLDARKIREILIKAKKGKSKL	<u>gaaatt</u> <u>aatac</u> <u>gactcactatagggagaccacaacggtttccctctagaaataat</u> <u>tttg</u> <u>ttaactttaagaaggagata</u> <u>tacca</u> ATGGAAGATGCTAAAAATATTA AAAAAGGTCCAGCGCCTTTTATCCTCTGGAGGACGGTACTGCTGGGGAACAGCTTCACAAAG CAATGAAACGTTACGCCCTGGTGCCGGGCACCATCGCGTTCCTGATGCTCACATTGAAGTCAACATCACGTACGCAGAAATTTT CGAGATGTCTGTACGCTGGCTGAAGCGATGAAAAGGTACGGTCTCAACACCAACCATCGAATTGTTGTGTGTAGCGAAAATTC CTGCAGTTTTTCTGCGGTTCTGGGCGCCTGTTTATCGGTGTAGCTGTTGCACCGGCGAACGACATCTACAACGAACGTGAGT TACTTAACAGTATGAATATTTACAGCCAACAGTCGTGTTCTGTTCTAAGAAAGGACTGCAAAAAATCCTGAACGTACAGAAAA GCTGCCGATCATTAGAAAATCATCATAATGGATAGCAAACTGACTATCAAGGCTTCCAGTCCATGTACACCTTTGTTACTTCG CACTTGCTCCGGGCTTCAACGAATATGATTTCTGCGCGAATCTTTGACCGTGATAAAACGATTGCTCTCATCATGAACAGCT CTGGTTCCACCGGCTGCCAAGGGGGTAGCACTGCCACATCGCACTGCTTGCGTTCTGTTTCTAGTACGCGCCGACCCGATTTT CGGTAATCAGATCATCCCTGATACCGCGATTCTGAGCGTCTGTTCCGTTTACCATGGCTTCGGTATGTTCTACTACGCTTGCTAC CTGATCTGTGGTTTTCTGTGTAGTGTTAATGTACCGGTTGAGGAAGAAGTCTTTCTGAGATCTCTGCAGGACTATAAAATCCAAT CCGCTCTCCTGTTCCGACCTTGTCTCATTCTTTGCAAAATCTACTCTGATTGATAAATACGACCTTAGCAACCTGCACGAAAT CGCTTCGGGCGGTGCGCCGCTGTCTAAGGAGGTAGGGGAAGCAGTTGCCAAACGTTTCCATTTACCAGGAATCCGCCAGGGTTAC GGCCTGACCGAAACAACCTCCGCTATTCTGATCACGCCTGAGGGTGACGATAAACCGGGCGCGGTGGGTAAGGTGTTCCCTTCT TTGAAGCTAAAGTAGTGGACCTCGATACCGGCAAACTCTGGGTGTTAACCAGCGTGGGGAACCTTTCGCTACGCGGCCGATGAT TATGAGTGGTTATGTTAACAATCCGGAAGCAACCAACGCTCTGATCGACAAAGATGGCTGGCTGCACAGCGGTGACATCGCTAC TGGGATGAGGACGAACACTTCTTCATTGTGATCGTCTGAAGTCTTTGATCAAATACAAAGGATATCAAGTGGCGCCAGCAGAAC TGGAGTCCATCTTACTGCAGCATCTAACATTTTTGACGCTGGTGTGCGGGCCTCCCGGATGACGATGCTGGTGAATGCCGGC AGCCGTAGTTGTGCTTGAACACGGGAAAATATGACGGAAGGAGATCGTAGACTACGTTGCTAGCCAGGTACCACTGCGAAA AAACTGCGTGGCGGTGTTGTGTTCTGTAGATGAAGTTCCGAAAGGCTGACCGGTAAGCTGGACGCACGCAAAATCCGTGAAATTC TGATCAAAGCTAAAAAGGCGGTAAATCTAAACTGtaatgaataactaatcc

1. ORFs are shown by uppercase. T7 promoter and SD sequence are underlined and double-lined, respectively.

Table S3. Sequence of trastuzumab HC (AT variant)

Name	Amino acid sequence	Nucleotide sequence ^{*1}
AT	MEVQLVESGGGLVQPGGSLRLSCAASGFNIKDTYIHWVRQAPGKGLE WVARIYPTNGYTRYADSVKGRFTISADTSKNTAYLQMNSLRAEDTAV YYCSRWGGDGFYAMDYWGQGLVTVSSASTKGPSVFPLAPSSKSTSG GTAALGCLVKDYFPEPVTVSWNSGALTSGVHTFPAVLQSSGLYSLSS VVTVPSSSLGTQTYICNVNHKPSNTKVDKKVEPKS	<u>gaaattaatac</u> <u>gactcactatagggagaccacaac</u> <u>ggtttccctctagaaataat</u> <u>tttg</u> <u>tttaactttaagaaggagata</u> <u>tacca</u> ATGGAAGTACAATTAGTTGAATCGGGTGGTGGTCTGGTCCAACCGGGTGGCTCGCTGCGTCTGTCTGTGCGGCGTCGGGCTTTA ACATCAAAGATACCTATATTCATTGGGTTCGTCAGGCACCGGGCAAAGTCTGGAATGGGTCGCTCGCATCTACCCGACCAACGG CTATACGCGTTACGCGGATTCTGTGAAAGGTCGCTTTACCATTTCCGCGGACACCTCAAAAAACACGGCCTATCTGCAGATGAAC AGCCTGCGTGCAGAAGACACGGCTGTTTATTACTGCAGTCGCTGGGGCGGTGATGGCTTTTATGCCATGGACTACTGGGGCCAAG GTACCCTGGTCACCGTGAGCTCTGCATCGACCAAAGGTCCGAGCGTCTTCCCGTGGCTCCGAGTTCCAAATCGACCAGCGGCGG TACGGCAGCACTGGGTTGTCTGGTTAAAGATTATTTCCGGAACCGGTTACCGTCTCTTGGAACAGTGGCGCGCTGACCAGCGGT GTCCATACGTTCCCGCAGTGCTGCAGTCATCGGTCTGTATAGCCTGAGCTCTGTGGTTACCGTGCCGAGTTCCTCACTGGGTA CCCAAACGTACATCTGCAACGTTAATCACAAACCGTCCAATACGAAAGTGGATAAAAAAGTTGAACCGAAAAGTtaatgaataac taatcc

1. ORF is shown by uppercase. T7 promoter and SD sequence are underlined and double-lined, respectively.