

Supplementary Information for

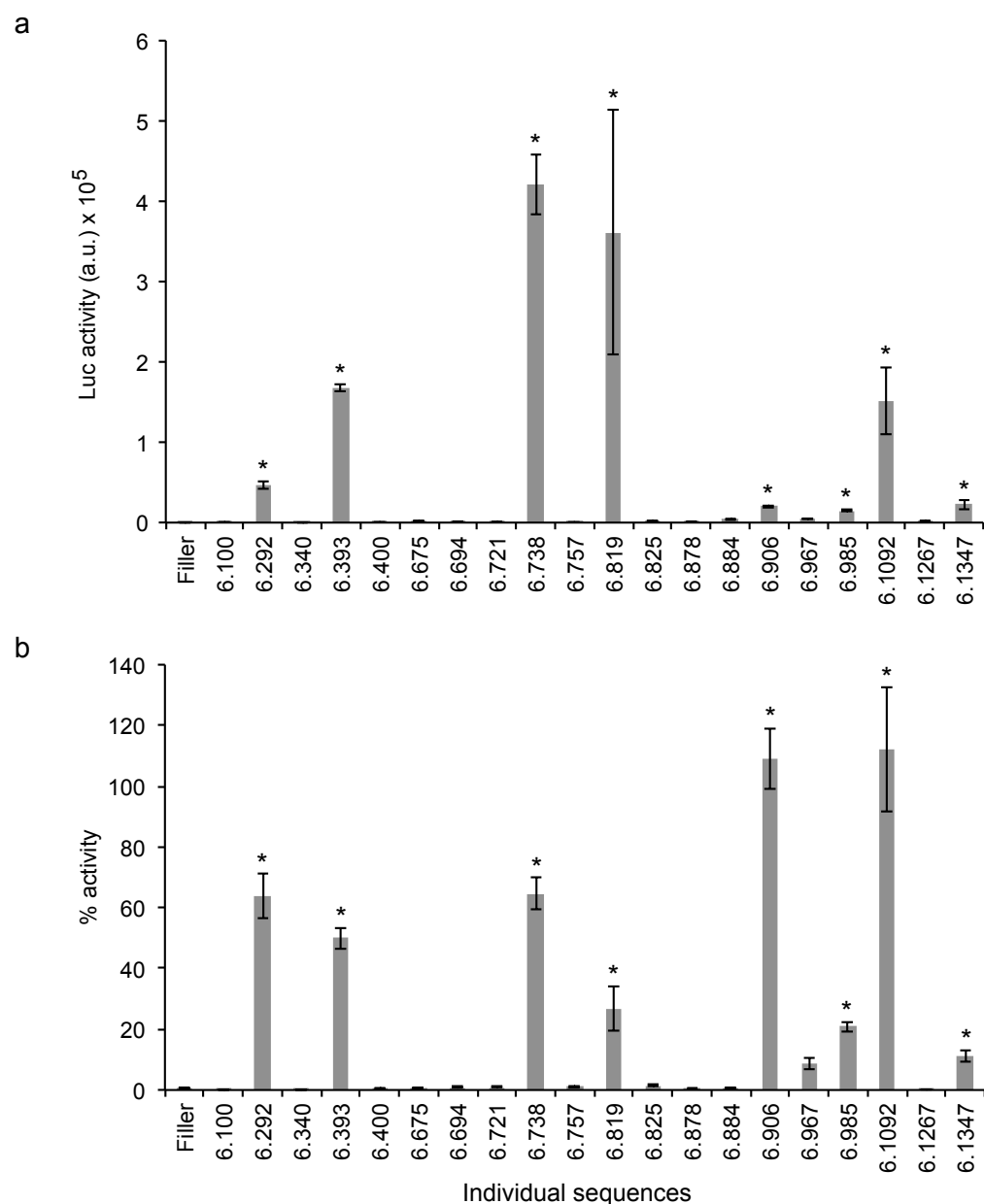
**Genome-wide Profiling of Human Cap-Independent
Translation Enhancing Elements**

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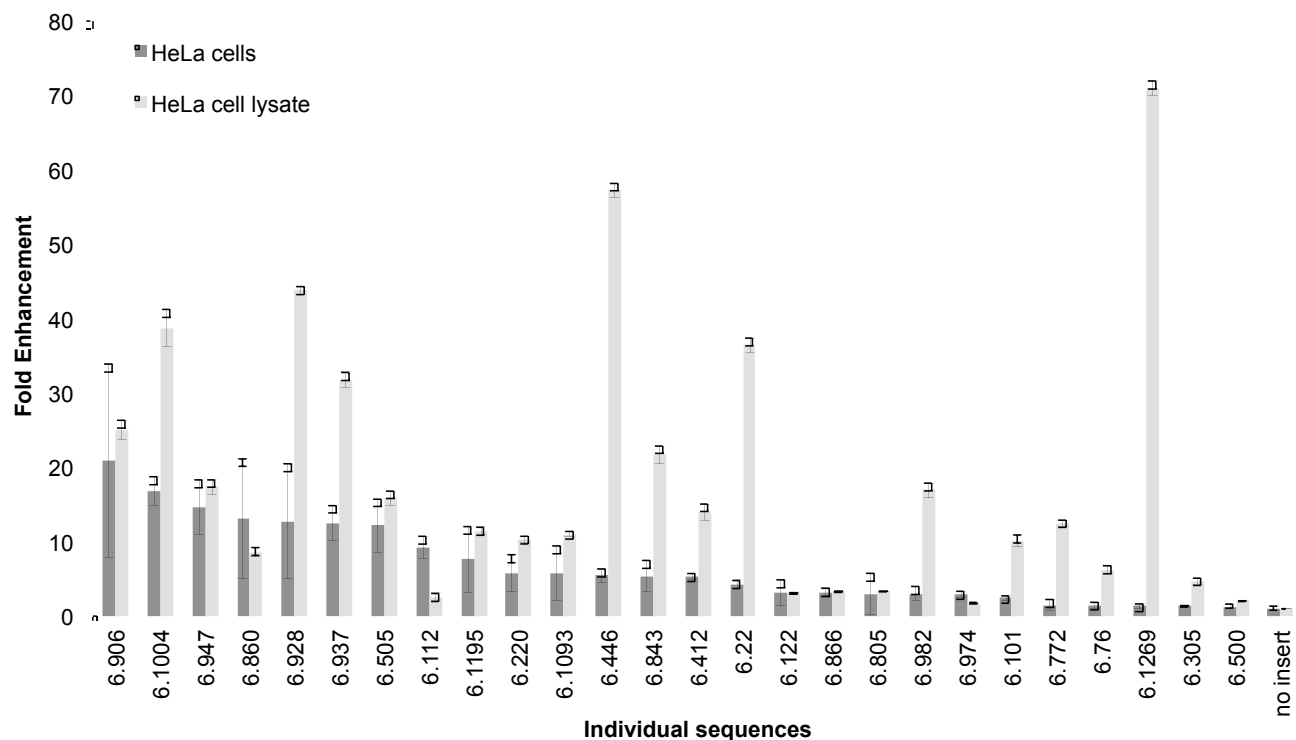
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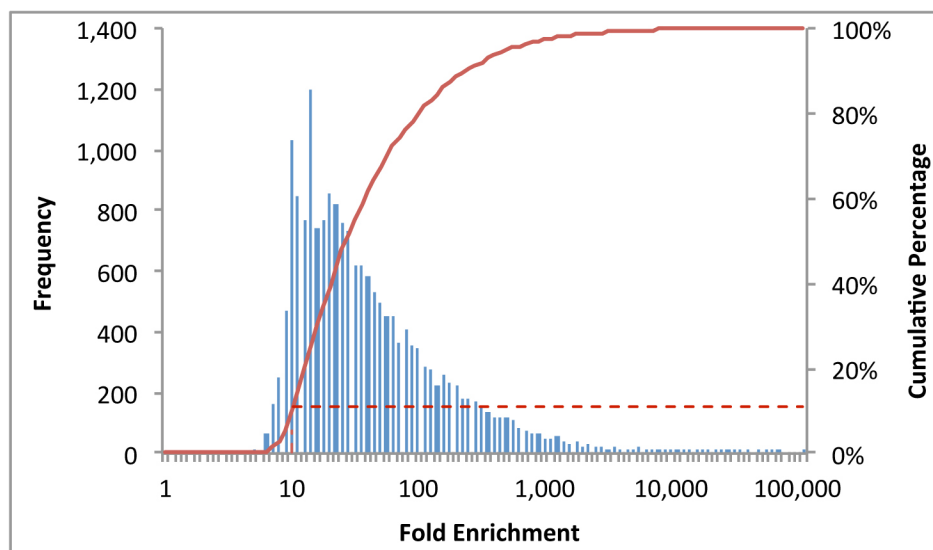
Supplementary Figures 1 through 5
Supplementary Tables 1 through 4



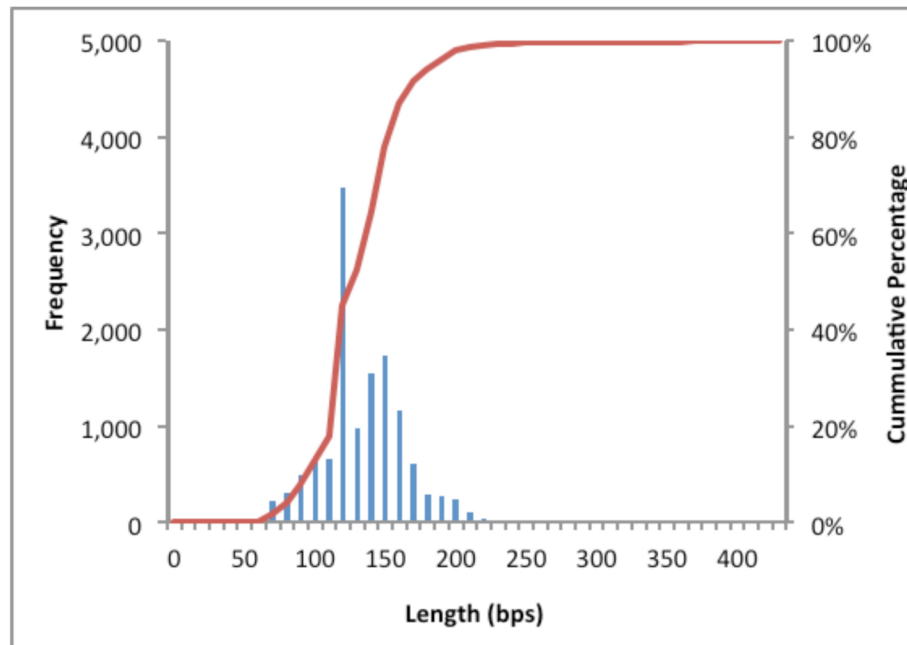
Supplementary Figure 1. Cryptic promoter activity of TEEs. **(a)** Twenty of the top translation enhancing sequences identified from round 6 of the selection were evaluated for cryptic promoter activity in the transfect/infect assay using a plasmid that does not contain any known promoters. Results for plasmids containing sequences from round 6 were compared to those of a plasmid which contained a simple filler sequence in place of the TEE. **(b)** The luciferase activity from the promoter-less plasmids was compared to the activity of the twenty TEEs in a plasmid containing a stable stemloop upstream of the TEE in the 5' UTR. Any TEEs which generated promoter-less activity greater than 10% of the stemloop activity, indicated with a *, were not included in further studies. Error bars represent standard deviation, $n = 2$.



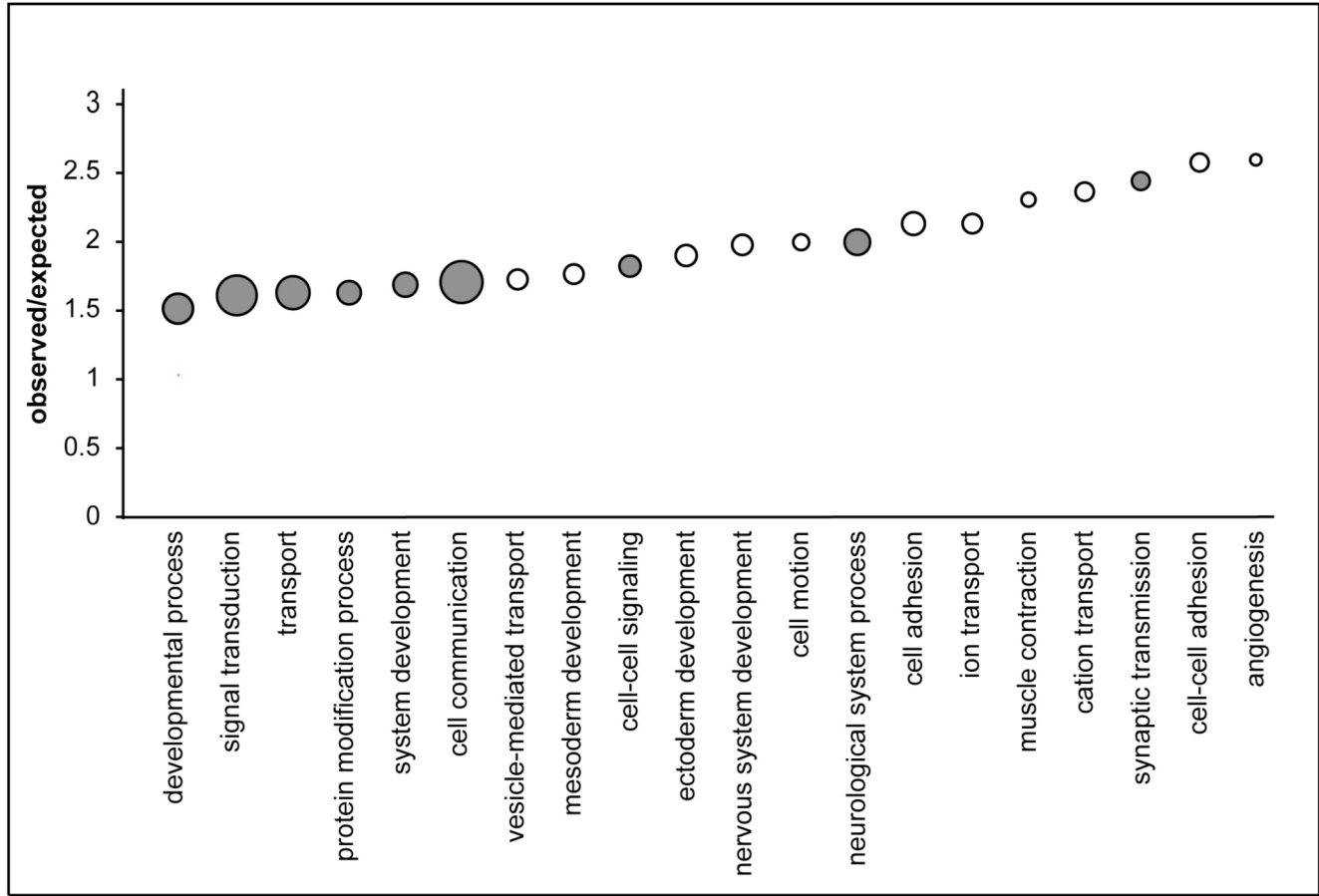
Supplementary Figure 2. Cap-independent activity of TEEs. A set of 26 sequences were selected that exhibit a range of TEE activity but no observable IRES activity. Each sequence was assayed in the absence of a 5' cap in HeLa cell lysate and values of fold enhancement over a no insert control were plotted (light grey). For comparison purposes, the fold enhancement observed under cap-dependent translation in HeLa cells was also plotted for each sequence (dark grey). Error bars represent standard deviation, $n = 2$.



Supplementary Figure 3. Frequency (blue bars) and cumulative distributions (solid red line) of fold enrichment for all single-copy peaks. Fold enrichment represents the ratio of normalized R6 reads over R0 reads for a specific peak²¹. The broken red line illustrates that 11% of the peaks are enriched less than 10-fold.



Supplementary Figure 4. Frequency (blue bars) and cumulative distribution (red line) of TBR lengths. TBRs have an average length of 132 bps with a standard deviation of 34 bps.



Supplementary Figure 5. GeneOntology enrichment analysis of genes harboring TBRs. Among the 1,236 unique genes found to contain a TBR, 1,156 were mapped and annotated in the PANTHER Classification System²³. Biological processes enriched at p-value < 0.01 after Bonferonni correction were displayed, as compared to all genes encoded in the human genome. The size of the bubbles represents the number of genes classified into a particular category, ranging from 25 to 348 genes. Closed bubbles correspond to biological processes that are significantly enriched after adjustment for gene length.

Supplementary Table 1.

The 225 clones obtained by Sanger sequencing for characterization after six rounds of mRNA display selection which matched with 100% identity to the reference human genome (hg18). The raw luciferase values generated in Figure 2c are indicated for each clone. Each value is an average of at least two independent replicates screened either with or without an upstream hairpin in the cytoplasmic expression system. The standard deviation is given in brackets.

Clone ID	Sequence	No Hairpin	Hairpin
6.877	AAAGAAATGGAATCGAAGAGAATGGAAACAAATGGAATGGAATTGAATGGAATGGAATTGAATGGAATGGGAACG	3035305 (1577678)	314089 (54405)
6.884	AGACAGTCAGACAATCACAAGAAACAAGAATGAAAATGAATGAACAAAACCTTCAAGAAA TATGGGATTATGAAGAGGCCAAATGT	2305236 (1186478)	600000 (54000)
6.675	AAAAGGAAATACAAGACAACAAACACAGAAACACAACCATCGGGCATCATGAAACCTCGTG AAGATAATCATCAGGGT	1847455 (635063)	311749 (67259)
6.738	AGACCCTAATATCACAGTTAAACGAACTAGAGAAGGAAGAGCAAAACAAATTCAAAGCTAG CGGAAAGCAAGAAATAACTAAGACCAG	1733429 (452397)	651369 (50508)
6.100	AAAGACTTAAACATAAGACCTAAAACCATAAAAACCACAGAAGAAAACATAGGCAATGCCA TTCAGGACATAGGCATGGGCAAAGACTTC	1452277 (632017)	670495 (106126)
6.1368	AGCAATAACCAAAACACCTCATTAAGAGTAGGCAAAGGACATAAACAGACACTTTTCAAAA GAAGACATACAGTGGCCAACAACATATG	1411421 (521089)	794569 (7833)
6.878	AGAAAGAATCAAGAGGAAATGCAAGAAATCCAAAACACTGTAACAGATATGATGAATAATG AGGTATGCACTCATCAGCAGACTCGACAT	1396035 (338240)	290104 (94771)
6.694	GCACTAGTCAGATCAAGACAGAAAGTCAACGAACAAAGAACAGACTTAACTACACTCTAGA ACAAATGGACCTA	1302812 (477520)	102497 (16857)
6.825	AGCAGCCAACAAGCATATGAAATAATGCTCCACAACACTCATCATCAGAGAAATGCAAATCA AAACCAAAAT	1278766 (773782)	105752 (4699)
6.1347	AATATACGCAAAATCAATAAATGTAATCCAGCATATAAACAGTACTAAAGACAAAAACCACAT GATTATCTCAATAGATGCAGAAAAGGCC	1225254 (580812)	206238 (12948)
6.1092	ATGTACACAAATCAATAAATGCAGTCCAGCATATAAACAGAACCAAAACACAAAAACCACATG ATTATCTCAATAGATGCAGAAAAGGCCTT	1190400 (231611)	135525 (12171)
6.1058	TATACCACACAAATGCAAAAAGATTATTAGCAACAATTATCAACAGCAATATGTCAACAAGTT GACAAACCTAGAGGACATGGAT	1165623 (301052)	101170 (19366)
6.819	AAACACACAAAGCAACAAAAGAAGCAACAAAAGCATAGATTTATTGAAATGAAAGTA CATTTACAGAGTGGGGGCAGGCT	1140355 (224411)	1350052 (157405)
6.400	GAAATCATCATCAAAACGGAATCGAATGGAATCATTGAATGGAATGGAATGGAATCATCATGG AATGGAAACG	1113034 (299473)	162519 (20057)
6.1033	AACAGAATGGAATCAAAATCGAATGAAATGGAATGGAATGAAAGGAATGGAATGAAATGGA ATGGAAAGGATTGCAATGGAATGCAATCG	1061047 (364617)	59574 (11355)
6.510	TACAAAGAACTCAAAACAAATCAGCAAGAAACAAAACAATCCCAACAAAATGTTGGACAAAG ACATGAATAGACAATTCTCGAAAGAAGATGTACAAATGGCT	1042802 (750728)	633029 (134335)
6.1218	TGTTGAGAGAAATTAACAAAGCACAGATAAATGGAAAAACGTGTTTCATAGATTGAAAGACT TCATGTGTATGGTGTC	1042478 (300368)	159015 (18189)
6.911	AAACGATTGGACAGGAATGGAATCACCATCGAATGGAACGAATGGAATCTCGAATGGAAT TGAATGAAATTATTGAACGGAATCAAATAGAATCATCATTGAACAGAATCAAATTGGATCAT	1017014 (471299)	99901 (10579)
6.914	AACAATAAACAAACTCCAACAGACACAATAGTCAAAATGCTGAAAATGAAATATAAAGGAA CAATCTCGATGGTAGCCCAAGGA	982103 (443526)	59312 (3550)
6.985	AAATCAATAAATGTAATTCAGCATATAAACAGAACCAAGACAAAAACCACATGATTATCTC AATAGATGCAGAAAAGGCCTT	979821 (241519)	71132 (4465)
6.557	GCTCAAGGAAATAAAATAGGACACAAAGAAATGGAAAAACATTCCATACTCATGGATAGAA AGAATCAATATCATGAAATGGCC	927222 (364650)	831181 (137808)
6.906	AACATACGCAAAATCAATAAATGTAATCCAGCATATAAACAGAACCAAGACAAAAACCACAT GATTATCTCAATAGATGCAGAAAAGGCC	918239 (572874)	18499 (1588)
6.1216	AACAATCACTAGTCTTAAGTAAGAGACAACACCTTTTGTACACACAGTTTGTCTTAACCTT ATCTTGGTAATTGGGGAGACC	909237 (242120)	37582 (5994)

6.757	AGAAAACACACAGACAACAAAAACACAGAACGACAATGACAAAATGGCCAAGC	838877 (297033)	68889 (1952)
6.1222	ACACAACAACCAAGAAACAACCCATTAAGAAGTGGGAAAAATACATGAATAAACACATCTC AAAAGAAGACAAACAAGTGGCTAAC	837699 (258460)	33762 (1577)
6.1004	ACAGCAGAAAAAGAACATCAGAAAATCACTCTACATGATGCTTAAATACAGAGGGCAAGCAA CCCAAGAGAAAAACCACTTCCTAAT	738000 (86783)	3390 (1018)
6.1159	GAATAGAACAGAATGGAATCAAATCGAATGAAATGGAATGGAATAGAAAGGAATGGAATGA AATGGAATGGAAAGGATTCTGAATGGAATG	718730 (40674)	10463 (179)
6.476	TAAGCAGAGAAAAATATCAACACGAAAAATAATGCAAGGAGAAAAATACAGAACAATCCAAAA TGTGGCC	713868 (394095)	6557 (1585)
6.138	GAACAATCAATGGAAGCAGAAACAAATAAACCAAGGTGTGCATCAAGGAATACATTCACGC ATGATGGCTGTATGAGTAAATG	689913 (166548)	853627 (241289)
6.958	GATCAATAAATGTAATTCATCATATAAACAGAGAACTAAAGACAAAAACATGATTATCGC AATACATGCAGAAAAGGCC	665463 (309108)	34703 (2577)
6.947	GACAAGAGTTCAGAAAGGAAGACTACACAGAAATACGCATTTTAAAGTCACTGACATGGAGA TGACACTTAAACCATGAACATGGATGGG	643049 (163468)	6725 (1745)
6.677	AAGCAAAGAAAGAATGAAGCAGCAAAAGAACGAAAGCAGGAATTTATTGAAAACCAAAGTA CACTCCACAGTATGGGAGCGGACCCGAGCA	623500 (128025)	400175 (4740)
6.340	ACCAACATAAGACAAAGAAACATCCAGCAGCTGCCTATGGCAAAAGATTACAATGTGTCAAA CAAGAGGGCAATG	617584 (301433)	131928 (33296)
6.1337	GGACAAATTGCTAGAAAATAACAAATTACCAAAAATGATTCAAGTAGAGACAGAGAATCAA AATAGAACTACACATAAGTGGCCAAG	616441 (155177)	492562 (40113)
6.967	AACATAATCCATCAAATAAACAGAACCAAGACAAAAACCACATGATTATCTCAATAGATGC AGAAAAGGCCTTC	605828 (179018)	58404 (16069)
6.721	AAAATCAATATGAAAACAAACACAAGCAGACAAAGAAAAATTGGGCAAAAGGTTTGAGCAGA CACTTCACCAAGAAGTACAAATGGCAAATCAGCA	592507 (374103)	74817 (7845)
6.860	AACCAAATTAGACAAATTGGAAATCATTACACATAACAAAAGTAATAAACTGTCAGCCTCAG TAGTATTCATTGTACATAAACTGGCC	578229 (355333)	15822 (2551)
6.606	AAGGAATTTAAGCAAATCAACAAGCAAAACCAAATAATCCCATTAATAAGTGGGTAAAGG ACATGAATACACACTTGTCAATAGAGGACATTCAAGTGGCCAAC	576864 (206562)	371828 (47996)
6.1152	TAACCTGATTTGCCATAATCCACGATACGCTTACAACAGTGATATACAAGTTACATGAGAAAC ACAAACATTTTGAAGGAACTGTGGCCAGATG	564600 (152127)	631 (355)
6.928	AACTAACACAAGAACAGAAAACCAAACATCACATGTTCTCACTCATAAGCGGGAGCTGAACA ATGAGAACACACGGACACAGGGAGAGGAACATG	562311 (339804)	11949 (3440)
6.957	TAACTGACACAAACACAGACACACAGATACACACATACATACAGAAATACACATTCACACA CAGACCTGGTCTTTGGAGCCAGAGATG	560121 (265903)	10136 (2695)
6.937	ATCAACAGACAACAGAAACAAATCCACAAAGCACTTAGTTATTAGAACTGTCATACAGACTG TACAACAACCACATTTACCAT	552647 (105242)	5580 (2596)
6.1374	AAATAAGCCAAACGGTCATAAATTGCAAAAGCCTTTTACAATCCAAACATGATGGAAACGATAT GCCATTTTGAAGGTGATTGAAAAGCACATGGTTT	546881 (209384)	28404 (3744)
6.330	AAACAGTTCAAAAATTATTGCAACAAAATGAGAGAGATGAGTTTATCTTGCAAACTAATGGA TGGTAGCAGTGACAGTGGCAAAACGTGGTTTGATTCT	544145 (229511)	240896 (28278)
6.505	TAAGCAACTTCAGCAAAGTCTCAGGATACAAAATCAATGTACAAAATCACAAGCATTTCTTA TACACCAACAACAGACAAACAAGAGTGCCAAATCATG	537472 (158642)	1104 (262)
6.1110	AGCAAACAAACAAACAAACAAACAACTATGACAGGAACAAAACGTCACATATCAACATTA ACAAAGAATGTAAACAGCCTAAATGCTTCACTTAAAGTTATAGACAGGGGCTGGGCATGGT GGCTCACGCC	525518 (146605)	8480 (1428)
6.565	GGAAATAACAGAGAACACAAACAAATGGGAAAACATTCCATGTTTCATGGATAGGAAGAATC AATATTGTGAAAATGGCCATACT	525144 (64516)	415118 (158687)
6.266	AGCAACTTCAGCAAAGTCTCAGGATACAAAATCAATGTACAAAAATCACAAGCATTTCTTATA CACCAATAACAGACAAACAGAGAGCC	522276 (445315)	2664 (533)
6.1127	AGATAAGAATAAGGCAAACATAGTAATAGGGAGTTCATGAATAACACACGGAAAAGAGAACT TACAGGGCTGTGATCAGGAAACG	513531 (210800)	2068 (853)
6.393	AGGAAATAAAAGAAAGACACAAACAAATGGAAGAACATTCCATGCTTATGGATAGGGAGAAT CAGTATCGTGAAAATGGCCATACT	496760 (98037)	337007 (37471)
6.459	AACATACGAAAATCAATAAACGTAATCCAGCATATAAACAGAACCAAGACAAAAACCACA TGATTATCTCAATAGATGCAGAAAAGGCCTTT	488621 (366662)	117400 (17092)

6.837	AATGGACTCGAATGAAATCATCATCAAACGGAATCGAATGGAATCATTGAATGGAATGGAATGGAATCATCATGGAATGGAAACG	487604 (194655)	12648 (339)
6.1085	AAGATTTAAACATAAGACCTAAAACGACAAAAATCCTAGGAGAAAACCTAAGCAATACCATT CAGGACATAGGCATGGGCAAAGACTTCATG	487298 (67515)	1742 (354)
6.1217	TAATGAGAAGACACAGACAACACAAAGAATCACAGAAACATGACACAGGTGACAAGAACAG GCAAGGACCTGCAGTGCACAGGAGCC	480868 (168296)	3422 (510)
6.998	TAAACGTTAGACCTAAAACCATAAAAACCCTAGAAGAAAACCTAGGCATTACCATTGAGGAC ATAGGCATGGGCAAGGAC	477395 (163671)	5362 (499)
6.1031	GAATTGAATTGAATGGAATGCAATGGAATCTAATGAAACGGAAAGGAAAGGAATGG AATGGAATGGAATG	470737 (155700)	22197 (559)
6.51	GTAATGGAATGGAATGGAAAGGAATCGAAACGAAAGGAATGGAGACAGATGGAATGGAATG GAACAGAG	456936 (123862)	218969 (23320)
6.512	AGAGAAATGCAAAATCAAAACCACAATGGAATACCATCTCACGCCAGTCAGAATGGCAATTAT TAAAAAATCACAACAATTAATGATGGCAAGGCTGTGG	456761 (63659)	1140039 (141396)
6.1011	AACATACACAAATCAATAAACGTAATCCAGCTTATAAACAGAACCAAAGACAAAAACCACAT GATTATCTCAATAGATGCGGAAAAGGCC	454272 (201861)	44235 (10112)
6.934	TAAACAGAACCAAAGACAAAAATCACATGATTATCTCAATAGATGCAGAAAAAGGCC	442686 (106404)	21715 (3693)
6.508	AATGGAATGCAATCGAATGGAATGGAATCGAACGGAATGGAATAAAATGGAAGAAAACCTGG CAAGAAATGGAATCG	439421 (112231)	71961 (9212)
6.1176	AGATAAAAAGAACAGCAGCCAAAATGACAAAAGCAAAAAGCAAAATCGTGTTAGAGCCAGG TGTGGTGATGTGTGCT	435713 (215490)	708 (231)
6.278	AGGAAAGTTTTCATATGAGAAAGATACAAACCAACAGAATAAGCAAACCTGGATAAACAGA AAATACAGAGAGAGCCAAGG	428929 (161517)	32319 (11401)
6.1178	GCAATCTCAGGATACAAAATCAATGTGCAAAAATCACAAGCATTCTCATACACCAATAACAG ACAAACAGAGCCAATCATG	422623 (197106)	763 (610)
6.7	AGCATTTCATATCTTGCAGTGTTGGGAAAGAGTGAGAGGTTGTGATGTCAAGAAGGATAGGTC AGAAGTGGAAGGTATGGGGGATTGTGCCTGCTGCATGGCT	411441 (74456)	895 (371)
6.720	AGCAACTTCAGCAAAGTCTCAGGATACAAAATCAATGTGCAAAAATCACAAGCATTCTTATA CACCAATAACAGACAAACAGAGAGCC	406440 (341568)	7151 (1433)
6.112	AGCAACTTCAGCAAAGTCTCAGGATACAAAATCAATGTGCAAAAATCACAAGCATTCTTATA CACCAACAACAGACAAACAGAGAGCC	404534 (68971)	8735 (5293)
6.276	TAAGCCGATAAGCAACTTCAGCAAAGTCTCAGGAGACAAAATCAATGTGCAAAAATCACA GCATTCTTATACACTAATAACAGACAAAACAGAGGCCAAATCATG	400062 (145375)	7217 (226)
6.1166	AACGTGACATACATACAAAAAGTTTTAGAGCAAGTGAAATTTAGCTGCTATATGTTAATTG GTGGTAATCCC	398359 (214160)	7800 (350)
6.12	TACGCAAATCGATAAATGTAATCCAGCATATAAACAGAACCAAAGACAAAAACCACATGATT ATCTCAATAGATGCAGAAAAGGCC	392958 (154032)	7860 (999)
6.822	GCAATCGAATGGAATGGAATCGAACGGAATGGAATAAAATGGAAGAAAACCTGGCAAGAAAT GGAATCG	386411 (100074)	169262 (15916)
6.1094	TTGAATCGAATGGAATCGAATGGATTGGAAGGAATAGAATGGAATGGAATGGAATTGACTC AAATGGAATG	380199 (69976)	7443 (1326)
6.70	TAAAGAAAAACAAACAAACAGAAATCAATGAAAATCCCATTCAAAGGTCAGCAACCTCAA GACTGAAGGTAGATAAGCCCACAAGGATG	378781 (99785)	28152 (4132)
6.1371	GTCATATTTGGGATTTATCATCTGTTTCTATTGTTGTTGTTTGTAGTACACACAAAGCCACAATA AATATTCTAGGCT	373990 (148884)	3712 (589)
6.1111	AAAAGTACAGAAGACAAACAAAAATGAGAGAGAGAAAGATAACAGACTATAGCAGCATTGG TGATCAGAGCCACCAG	365787 (132770)	12194 (1543)
6.337	AACCCACAAAGACAACAGAAGAAAAGACAACAGTAGACAAGGATGTCAACCACATTTGGA AGAGACAAGTAATCAAACACATGGCA	358955 (79884)	3073 (532)
6.1084	AAAGACCGAAACAAACAGAAACAGAAACAAACAAACAATAAGAAAAATGTTAAGCAAAA CAAATGATTGCACAACCTACATGATTACTGAGTGTTCTAATGGT	356591 (91914)	181707 (43887)
6.1200	AATCAGTAAACGTAATACAGCATATAAACAGAACCAAAGACAAAAACCACATGATTATCTCA ATAGATGCAGAAAAGGCC	344851 (172561)	2191 (988)
6.734	AAGCAACTTCAGCAAAGTCTCAGGACACAAAATCAATATGCGAAAATCACAAGCATTCTAT ACACCAATAATAGACAAACAGAGAGCCAAATCATG	343945 (198581)	2665 (2332)
6.1243	AGCAACTTCAGCAAATCTCAGGATACAAAATCAATGTACAAAATCACAAGCATTCTTATA CACCAACAACAGACAAACAGAGAGCC	339991 (147068)	11117 (877)

6.1195	TAATGCAAACCTAAAACGACAATGAGATATCAATACATAACTACCAGAAAGGCTAACAAAAA ACAGTCATAACACACCAAAGGCTGATGAGTGAGGATGTGCAG	336799 (195135)	5012 (2589)
6.1370	AGCAACTTCAGCAAAGTCTCAGGATACAAAATCGATGTGCAAAAATCACAAGCATTCTTATA CACCAATAACAGGCAAACAGAGAGCC	333483 (74595)	8526 (4077)
6.921	GATATATAAAACAAGAAAACAATAATCACAACCTCAATATCAAAGTGCAATGATGGTGCAAAA TGCAAGTATGGTGGGGACAGAGAAAGGATGC	332671 (167784)	786 (77)
6.1206	AAGACAGAACTGAAACTCAACAGAGAAGTAACAAGAACCTAAGACAAGGAAGGAGAG GGAAGGCAGGCAG	326883 (174754)	321 (75)
6.454	TAAGACACATAGAAAACATAAAGCAAAATGGCAGATGTAAATGCAACCTATCAATCAAAACA TTACGAATGGCTT	325604 (261431)	7041 (904)
6.530	TGAAACAAATGATAATGAAAATACAACATACCAAACATACGAGATACAGTAAAGCAGTACT AAGATGCAAGTATATATTGCTACAAGTGCCTAC	323195 (63549)	7774 (1461)
6.553	AATGTAATCCAGCATATAAACAGAGCCAAAGACAAAAACCACATGATTATCTCAATAGATGC AGAAAAAGCCTTTGACAAAATTCAACAACCCTTCATGCTAAAACTCTCAATAAATTAGGTAT TGATGGGACG	312956 (25650)	77626 (4146)
6.1019	ACAAAATTGATAGACCACTAGCAAGACTAATAAAGAGAAAAGAGAGAAGAATCATTACCA TTCAGGACATAGGCATGGGCAAGGAC	311940 (91754)	3577 (736)
6.1139	AAGGATTCGAATGGAATGCAATCGAATGGAATGGAATCGAACGGAATGGAATAAAATGGAA GAAACTGGCAAGAAATGGAATCG	308061 (65975)	28484 (1833)
6.501	GATCATCAGAGAAACAGAGAAATGCAAAATTAACCACAATGAGATACTATCTCCACACAAG TCGAATGGCTAT	307283 (88357)	41520 (1329)
6.1361	ATCAAAAGAAAAGCAACCTAACAAATACGGGAAGAATATTGAATAGACATTTACAGGAAA AGATATATGAATGGCCAAAAAGCAATGAAAAG	307108 (139863)	256952 (45676)
6.671	AACAGCAATGACAATGATCAGTAACAACAAGACTTTTAACTTTGAAAAATCAGGACC	303689 (189910)	4340 (1303)
6.672	AAGAGCCTGAATAGCTAAAGTGATCATAAGCAAAAAGAACAAAGTCGGAAGCATCATTAC CTGACTTCAAACCTATACTCAAAGGCTATG	302024 (177555)	4164 (890)
6.422	ACTCAGGAAAAATAACGAATCCAACTCACAGGAGAAAGATACAAACCAGAAACCAATTT CAAATTACAAGGACCAGAATACTCATGTTGGCTGGCCAGT	301034 (122869)	4844 (1117)
6.838	TTGACCAGAACACATTACACAATGCTAATCAACTGCAAGGAGAATATGAACAGAGAGGAGG ACATGGATATTTTGTG	298640 (112011)	18639 (5119)
6.624	AACATATGGAAAAAACTCAACATCACTGATCATTAGAGAAATGCAAAATCAAAACCACAATG AGATACCATCTCAGCCAGTCAGAATGGCG	281225 (18000)	16959 (1029)
6.758	AGCAACTTCAGCAAAGACTCAGGATACAAAATCAATGTGCAAAAATCACAAGCATTCTTATA CACCAATAACAGACAGAGAGCCAAAT	277718 (96692)	9780 (2865)
6.539	TGGGATATGGGTGAAAGAACAAGTTGCGAGAAAAGATACAGTGAATTATGGACCATGAGTTC GGGAAAGAAGGGTAGGACTGCG	276281 (21281)	46309 (3634)
6.689	AGCAGTGCAAGAACAACATAACATACAAGTAAACAACACATGGGGCCAGGTAATAAAAAG TCAGGCTCAAGAGGTCAG	275584 (107378)	9126 (1274)
6.20	AAGGAAAAGTAAAAGGAACTTAACACCTTCAAGAAAAGACAGACAAATAACAAAACAGCAG TTTGATAGAATGAGATATCAGGGGATGGCA	274560 (77988)	22100 (4572)
6.247	GCTAGTTCAACATATGCAATCAATAAACGTAATCCATCACATAAACAGAACCAATGACAAA AACCACGATTATCTCAATAGATGCAGAAAAGGCC	270601 (142879)	13083 (346)
6.1098	AACATCACTGATCATTAGAAACACACAAATCAAAACCACAATAAGATACCATCTAACACCAG TCACAATGGCTATT	269187 (112819)	422 (158)
6.1104	AGAGCATCCACAAGGCCAATTCAAAGAATCTGAAATAATGTATTGTTACTGCAACAGTTGTG AGTACCAGTGGCATCAG	267927 (111658)	20730 (1082)
6.1169	GGAATAACAACAACAACCAAAAGACATATAGAAAACAAACAGCACGATGGCAGATGTA AAGCCTACC	265210 (119164)	1934 (473)
6.927	AAACGCAGAAACAATCAACGAAAGAACGAAGCAATGAAAGACAAAGCAACAAAAGAATG GAGTAAGAAAGCACACTCCACAAAGTGAAGCAGGCTGGGACA	261260 (61121)	14234 (2261)
6.180	AGCAACTTCAGCAAAGTCTCAGGATACAAAATCAATGTGCAAAAATCACAAGCATTCTTATA CACCAACAACAGACAAACAGAGAGCC	260642 (69452)	4226 (968)
6.409	AGCAACTTCAGCAAAGTCTCAGGATACAAAATCAATGGGAAAAAATCACAAGCATTCTTATA CATCAATAACAGACAAACAGAGAGCC	259886 (180182)	8816 (1751)
6.220	ACACATTTCAGGAAGGAAACAAGAACAGACAGAAACACAACATACTTCATGAAACCACATT TAGCATCCTGGCCGAGTATTCATCA	255837 (107532)	2134 (676)

6.1093	AGCAACTTCAGCAAAGTCTCAGGACACAAAATCAATGTGCAAAAATCACAAGCATTCTTATACACCAATAACAGACAAACAGAGAGCC	252917 (163469)	1639 (387)
6.861	TATTTTACCAGATTATTCAAGCAATATATAGACAGCTTAAAGCATACAAGAAGACATGTATAGATTACATGCAAACACTGCACCACCTTACATAAGGGACTTGAGCAC	248402 (57325)	29873 (7719)
6.926	CCCAACTTCAAATTATACTACAAGGCTACAGTAATCAAAAAAGCATAGTACTATTACAAAAACAGACACACAGGCCAATGGAATACAAT	247360 (75303)	124320 (9447)
6.533	AGAAAGGATTCTGAATGGAATGAAAAAGAATTGAATGGAATAGAACAGAATGGAATCAAATCGAATGAAATGGAATGGAATAGAAAGGAATGGAATG	244878 (42985)	306002 (18395)
6.446	GTTTACAGTCAAGTGACAAACAGAATATAAGCAAAACAAAAGAGAACATATACTTACAAACTATGCTAAGTGCCATGAAGGAAAAG	239134 (39944)	5541 (1903)
6.843	AAGAGTATTGAAGTTGACATATCTAGACTGATCAAGAACAAAGACAAAAGGTACAGATTATCAAGAAAATGAGCGGGCAAAGCAAGATGGCC	236530 (93417)	10514 (3814)
6.412	AGTAGAATTGCAATTGCAAAATTTACACATATACTCACACACAAGTACACACATCCACTTTTACAACATAAAAAACTAGCACCCAGGACAGGTGCAGTGGCT	233664 (18308)	3361 (556)
6.113	TGAATGCTATAGAGCAGTAAAAACAAATAAATGAACTACATTACAGCTACTTACAACCATATGAAAGAATATAACCATAACAATGATGAGTGGACAAAAGCTAAGTGTGAAAGAATGCATAGTGCTACAGCAGCCAACATTACAGC	232291 (54617)	33053 (9962)
6.764	GAATGGAATCAAATAGAATGGAATCGAAAACAAATGGAATGGAATGGAATGGGAGCTGAGATTGTGTCACCTGCAC	231243 (153619)	19471 (933)
6.739	TAAAAGTGTGCTCAACATCATTGATCATCAGAGAAATGCAAATCAAACTACAATGAGATATCATCTCATCCCAGTCAAAGTGGCT	228666 (78576)	1029 (227)
6.1130	TCAGACCATAGCAGATAACATGCACATTAGCAATACGATTGCCATGACAGAGTGGTTGGTG	224959 (83186)	1625 (481)
6.372	ACAAACAATCCAATTCGAAAATGGGCAAGATATTTACCAAAGACATGAGCTGATATTTAC	224592 (33513)	2349 (165)
6.619	AGGAAAAACAACAACAACAACAGGAAAAACAACCTCAGTATGAAGACAAGTACATTGATTTATTCAACATTTACTGATCACTTTTCAGGTGGTAGGCAG	223254 (21697)	16613 (755)
6.292	AACAAAACAAAAACCAACTCAATAACAAGAAGACAAACAACCAATTTAAATGAGCAAAAGAACTTGATAAACATGTCTCCAAAGAAGATACGGCCAAAGAGCAC	222088 (34458)	72358 (10095)
6.820	ATACAACTAAAGCAAATATAAGCAACTAAAGCAACAGTACAACCTAAAGCAAAACAGAACAAAGACTGCCAGGGCCTAGAAAAGCCAAGAAC	219935 (137568)	15470 (1787)
6.1232	AACAACAACAACAACAGGAAAAACAACCTCAGTATGAAGACAAGTACATTGATTTATTCAACATTTACTGATCACTTTTCAGGTGGTAGGCAGACC	219304 (72281)	8702 (808)
6.1294	AGAGAGTATTCATGATGAGGAGTATTACTGGACAAATAATTCACAAACGAACAAACCAAAGCGATCATCTTTGTACTGGCTGGCTA	219123 (57535)	10689 (219)
6.615	AGTAAATCACCATAAAGAAGGTAAAGAGTTCATTACAAAAACAACAACTGAAGAATCAGGCCATAGTA	216467 (31879)	18932 (3922)
6.1340	AAAATAGAATGAAAGAGAATCAAATGGAATTGAATCGAATGGAATCGAATGGATTGGAAAGGAATAGAATGGAATGGAATGGAATG	215818 (71066)	28030 (862)
6.912	AAAAGATGCAAAAGTAGCAAATGCAATGTTAAAACAAGCAAAGAAAGAATCAGGTGGACCATAGTGCAAGTGCTTCTC	215600 (67279)	26465 (4072)
6.736	TTCACAGCAGCATTACGCACAATAGCCAGAAGGTGGGAACAGACAAAATGCCTTTTGATGGG	208342 (56570)	2014 (560)
6.164	CCATAACACAATTA AAAACAACCTAAATGTCTAATAGAAGAACTGTTCAGACCGGGCATGTGGCTTATACC	208160 (42232)	5025 (1300)
6.1003	TGGATTTTCAGATATTTAACACAAAATAGTCAAAGCAGATAAAATACTAGCAACTTATTTTAAATGGGTAACATCATATGTTTCGTGCCTT	208145 (131866)	20526 (192)
6.174	ATCATTGAATGCAATCAGTGAATCATCACAGAATGGAATCGTACGGAATCATCATCGAATGGAATTGAATGGAATCATCAATTGGACTCGAATGGAAACATCAAATGGAATCGATTGGAAGTGTCGAATGGACTCG	205636 (73791)	15100 (2768)
6.1090	AGAAACAGCCAGAAAAACAATTATTACCTACAGCATTAAAACTATTCAAATGACAGCATATTTTCAGCAGAAATCATGAAGGCCAGAAGGACGTGTCAT	202072 (119711)	23752 (2735)
6.362	AAAATGATCATGAGAAAAATTCAGCAACAAAACCATGAAATTGCAAAGATATTACTTTTGGGATGGAACAGAGCTGGAAGGCAAAGAG	201290 (35378)	5630 (595)
6.638	AACCACTGCTCAAGGAAATAAGAGAGAAACACAAACAAATGAAAAAACATTCCATGCTCATGGATAGGAAGAATCAG	198157 (43112)	177877 (12541)
6.942	TACTCTCAGAAGGGAAGCAGATATTCAGCATAAAATCATATTGTTTGTACAAAGAGTCTGGGCA TGGTGAATGACACT	196660 (80728)	4077 (470)

6.198	TATAGTTGAATGAACACACATACACACACATGCCACAAAACAAAAACAAAGTTATCCTCA CACACAGGATAGAAACCAAACCAATCCCAACACATGGCAAGATGAT	196067 (36913)	1114 (426)
6.1155	GCTCAAAGAAATCAGAAATGACACAAGCAAATGGAAAAACATGCCATGTTTCATGAATATGAA GAATCAATATTGTTAAAAATGGCCATACTGCTCA	194502 (134103)	6561 (567)
6.222	GGATACAAAATCAATGTACAAAATCACAAGCATTCTTATACACCAATAACAGACAAACAGA GAGCC	192611 (55285)	7847 (5068)
6.467	AGCAACTTCAGCAAAGTCTCAGGATACAAAATCAATGTACAAAATCACAAGCATTCTTATA CACCAACAACAGACAAAACAGAGAGCC	192336 (106506)	24581 (6798)
6.336	AGGAGAATAGCAGTAGAATGACAAAATAGATTTTCACATGAAACTTGATGACAGTGTAGGA AATGGACTGAAAGGACAAGAC	191363 (20820)	1514 (49)
6.1372	AGCAACTTCAGCAAAGTCTCGGGATACAAAATCAATGTGCAAAAATCACAAGCATTCTTATA CACCAATAACAGGCAAACAGAGAGCC	190670 (78957)	4086 (567)
6.1260	AAGTTCAAACATCAGTATTAACCTTGAACATCAATGGCCTACATGCATCACTTAAACATACA GACAGGCAAATGGGTAAAGAAAACAAACAAGCAAACAAAACATGTTCCAAACATTTGTTGG CTAT	190004 (34474)	3370 (408)
6.1125	AAGAAACAATCAAAAGGAAGTGCTAGAAATAAAACACACTGTAATAGAAAAGAAGAAATGCC TTATGGGCTTATCAATAGACTAGACATGGCCAGG	187051 (55646)	15470 (2935)
6.22	AAAGAAAGACAGAGAACAAACGTAATTCAGATGACTGATTACATATCCAAGAACATTAGAT GGTCAAAGACTTTAAGAAGGAATACATTCAAAGGCAAAAAGTCACTTACTGATTTTGGTGGA GTTTGGCCATGGAC	186085 (24358)	10125 (3864)
6.882	AGCAACTTCAGCAAAGTTCAGGATACAAAATCAATGTGCAAAAATCACAAGCATTCTTATA CACCAACAACAGACAAAACAGAGAGCC	184382 (25851)	3651 (384)
6.986	AGAATCAAATGGAATTGAATCGAATGGAATCGAATGGATTGGAAAGGAATAGAATGGAATG GAATGGAATG	183241 (32501)	4554 (1195)
6.1109	AAACAGAACACAGATATCTGTAAAGGATTACACTATAGTATTCAACAGAGTATGGAACAGA GTATAGTATTCAACAGAGTATGCAAAGAACTAAGGCCAGAAAG	182533 (55153)	2412 (768)
6.663	AAAAAATGTTCAACATCACTAGTCAGCAGAGAAATGCAAATCAAAATCACAATGAGATAACT TCTCACACCAGACAGCATGGC	180506 (89101)	1749 (206)
6.1184	GAATCCATGTTTCATAGCACAACAACCAAACAGAAATCACTGTGAAATAAGAAACAAAGC AAAACACAGATGTCGACACATGGCA	180104 (118395)	1902 (663)
6.140	AGGATACAAAATCAAAGTGCAAAAATCACAAGCATTCTTATACACCAATAACAGACAAACAG AGAGCC	178671 (5526)	6343 (3611)
6.725	AACAGATTTAAACAAACCAACAAGCAAAAAACGAACAACTCCATTCAAACATGGACAAAAG ACACGAACAGACACTTTTCAAAGAAGACATACATGTGGCC	175959 (150271)	4973 (25)
6.353	AAAGACAATATACAAATGGCCAATAAGCACATGAAAAGACGCTCAACATCCTTAGTCGTAA GGCAATGCAATCAAAACCACAATG	174398 (67867)	36228 (4996)
6.1359	TAAACAACGAGAACACATGAACACAAAGAGGGGAACAACAGACACCAAGACCTTCTTGAGG GTGGAGGATGGGAGGAGGGAG	174274 (84771)	16274 (1707)
6.1147	GGTTCAACTTACAATATTTTGACTTGACAACAGTGCAAAAGCAATACACGATTAGTAGAAAC ACACTTCCAATGCCCATAGGACCATTCTGC	174208 (36685)	992 (759)
6.1198	AGCAACTTCAGCAAAGTCTCAGGATACAAAATCAATGAGCAAAAATCACAAGCATTCTTACA CACCAATAACAGACAAAACAGAGAGCC	173023 (138790)	36 (1)
6.499	AATCCAGCATATAAACAGAACCAAAAGACAAAACACATGATTATCTCAATAGATGCAGAAA AGGCC	169070 (109013)	64413 (8179)
6.238	TGAAAATACAAATGACCATGCAAGTAATTCGCGAGGGAGAGAGCGGATATGAACAAACAGA AGAAATCAGATGGGATAGTGCTGGCGGGAAGTCA	167988 (48361)	4567 (404)
6.679	GCAAATGATTATAAGTGCTGTTATAGAAACATTCAAAGACCAGAAAAGGACCACAATGGCTG ACCAC	166190 (89035)	10935 (1625)
6.915	AGTCAATAACAAGAGACAAACAACCAATTACAAAATGGGATATGAATTTAATAGATGTTA CTCCAAGGAAGATACACAAATGGCCAAC	165109 (154795)	5471 (1108)
6.295	ATGGTTAAACTCAACAATGAAAACACAAACAGCGCAATTTAAAAATGGGCAAAATGACAG GCCAGACCCAGTGGCTCATGCG	162682 (65172)	1251 (371)
6.1153	TAATACTCACAGAACTCAACAAAACACTATACATGCATTACCAGTTTATTATAAAGATACA AGTCAGGAACAGCCAAATGGAAGAAATGTAATGGCAAG	162172 (83853)	572 (117)
6.171	AACAGACCATAAATAAACACAGAAGACACACGAGTGAAAGTCAGTGCCCGCTGCGAATTA AATCGGGGTGATGTGATGGCGAGTGAGTGGGTAGTT	161968 (45784)	322233 (94464)
6.274	GAATAGAATAGAATGGAATCATCGAATGGAATCGAATGGAATCATCATGATATGGAATTGAG TGAATC	157454 (32910)	4694 (162)

6.1305	GGAATCTATAATACAGCTGTTTATAGCCAAGCACTAAATCATATGATACAGAAAACAAATGC AGATGGTTTGAAGGGTGGG	148528 (62475)	13031 (4492)
6.645	AAGATAGAGTTGAAACAGTGGACAATTAAGAGTAATTTGGAAGAATGGTGAAATTACAGCC ATGCTTTGAATCAGGCGGGTTCCTGCGC	142102 (20546)	8251 (513)
6.91	TGAAAAGAAGAATGACCATAAGCAAGCAGATGAAAAACAAAACAGAATTTTACAGACGTCT TGGACTGATATCTTGGGC	141535 (31906)	5630 (1451)
6.122	AGGAATCTATAATACAGCTGTTTATAGCCAAGCACTAAATCATATGATACAGAAAACAAATG CAGATGGTTTGAAGGGTGGG	137728 (77153)	8602 (3621)
6.866	AGGAAAAGAAAGAAATAGAAAATGCGAAATGGTAAGAAAAACAGCATAATAAACATTTGT ATGGTGTGATGGACAATGCATT	135910 (28772)	12027 (692)
6.805	TAACAGTACCAAAAAACAGTCATAATCTTCAAGAGCTTAAATTTAGCATGAAAGGAAGACAT TCATCAAAGAATCACACAAAGGAATGTAATAATTAATGGAGATTAGTGCCAGGAAAGAGC	131687 (122185)	12677 (949)
6.982	GCAAAACACAAACAACGCCATAAAAACTGGGCAAGGATATGAACAGACATTTTCAAAAC AAAACATACTTATGGCCAAC	131193 (44410)	3225 (650)
6.115	AACAAAATTGAACAACATGCAAAGAAACATAAACGAAGCAATGAAAGTGTGCAGATCCACT GAAATGAAAGTGCTGTCCAGAGTGGGAGCCAGCTCGAGA	130590 (20054)	31298 (1719)
6.974	GAATGGAATCAACATCAAACGGAATCAAACGGAATTATCGAATGGAATCGAAGAGAATCATC GAATGGCCACGAATGGAATCATCTAATGGAATGGAATGGAATAATCCATGG	126198 (20663)	4456 (254)
6.1114	TACAAGAAAATCAGAGTAACATTTATAAAACACAGAAAGTGTGAACACACAGCTATTGACCTT GAAAACAGTGAAAGAGGGTCTAGCTGTAGAACTAAGACATAAGCAAAGTTTTCATCAAGAA TACATGGGTGGCC	123430 (76049)	3849 (1078)
6.731	AAGAATTGGACAAAACACACAAACAAAGCAAGGAAGGAATGAAAGGATTTGTTGAAAATGA AAGTACACTCCACAGTGTGGGAGCAG	121593 (116877)	3680 (419)
6.1055	ACAGTTAACAAAAACCGAACAATCTAATTACGAAATGAACAAAAGATATGAACAGACATTC ACCCGAGAGTATACAGGGGCCAGGCATGGT	120592 (30876)	1886 (542)
6.424	AAACGCACAAACAAGCAAGGAAAGAATGAAGCAACAAAAGCAGAGATTTATTGAAAATGA AAAATACACTCCACAGGGTGGG	118075 (11404)	5317 (1387)
6.1061	CACCATGAGTCATTAGGTAAATGCAAATCAAAACCACAATGAAATACTTCACACCCATGAAG ATGGCTATAATAAAAAACAGACA	115104 (13101)	2149 (544)
6.516	AGCAACTTCAGCAAAGTCTCAGGAGACAAAATCAATGTACAAAAATCACAAGCATTCTTATA CACCAATAACAGACAAACAGAGAGCC	114940 (16782)	26204 (3831)
6.759	TGACATGCAAGAAATAAGGAAGTGCAAAAAACAAACAAACAAACAACAACAACAAC AACAACAACAAAAACAGTCCCAAAAGGATGGGCAG	109832 (101678)	4490 (939)
6.101	AGACTTGAAAAGCAGACAGAACGAAAAGCAAAAATGGACAAATGGAATCACATCAAGCTAAA AGGTTTTGCATGGCAAAGG	106852 (16914)	4109 (761)
6.232	GCAAAAGAAACAATCAGTAGAGTAAACAGACAACCTCATAGAATGCAAGAAAATCATCGCAA TCTGTACATCCAACAAAGGGCT	105730 (39780)	1650 (279)
6.785	ACAAAATCAAACCTCGATAAGAATGCAAGTGAATCAAAATGAGTTTCAAGGGGTGTGTG GCTAGTACACGCTTTCTACAGCTG	104995 (93336)	2475 (264)
6.1017	ACAAACCACTGCTCAAGGAAATAAGGACACAAACAAATGGAACAACATTCCTGCTCATGGA TAGGAAGAATCAATATCGTGAAAATGGCCATACT	101882 (40776)	4769 (14)
6.63	GAACGATTATCACTGAAAATTAATACTCATGCAAGTAGTAAACGAATGTAATGACCATGAT AAGGAGACGGACGGTGGTGATAGT	93346 (10992)	1237 (262)
6.38	AGCAGAAGAAATAACTGAAATCAGAGTGAACTGAATCAAATTGAGATGCAAAAATACATA CGAAATGGCCAG	93297 (26748)	15586 (1110)
6.792	TGAATAGACACACAGACCAATGGAACAGAATAGAGAACACAGAATAAATCTGCACACTTATA GCCAGCTGATTTTGGACAAATTTGCCAAG	92602 (42271)	5233 (1386)
6.1360	AGCAACTTCAGCAGTCTCAGTATACAAAAACAATGTGCAAAAATCACAAGCATTCTATATG CCAATAACAGACAAACAGAGAGCC	91940 (37501)	8301 (2839)
6.256	ACCAATCAAGAAAAACAATGCAACCCACAGAGAATGGACAAAAGCAAGGCAGGACAATGGCT T	90979 (23031)	1661 (530)
6.929	GCCACAATTTTGAACAACCATAATAATGAGAATACACAAGACAACCTCAATAATGTGGGAA GACAACTTTGCAATTCATCATGGC	90592 (24770)	14440 (4092)
6.756	GAAAATGAACAATATGAACAAACAAACAAAATTACTACCCTTACGAAAGTACGTGCATTCTA GTATGGTGACAAAAAGGAAA	89886 (54540)	2022 (271)
6.611	TATGCAAATCAATAAACATAATCCATCACATAAACAGAAACAAAGACAAAATGACATGATTA TCTCAATAGATGCAGAAAAGGCC	89850 (13794)	30494 (6293)

6.1194	CACCCATCTGTAGGACCAGGAAGCCTGATGTGGGAGAGAACAGCAGGCTAAATCCAGGGTTG GTCTCTACAGCAGAGGGAATCACAAGCCTGTTAGCAAGTGAAGAACCAACACTGGCAAGAGT GTGAAGGCC	84092 (53033)	27 (1)
6.503	AGGATACAAAAATCAATGTACAAAAATCACAACATTCTTATACACCAACAACAGACAAACAG AGAGCCAAATCATGGGTG	84032 (20403)	658 (89)
6.289	AGGAAAATGCAATCAGAACGACTATAACACACCATCTCAAACCTGTTAGGATGGCTATTAT CAAAAAGTCAAGAGATAACAAATGTGGGCAAGGG	83975 (30156)	6844 (156)
6.1175	GTAACAAAACAGACTCATAGACCAATAGAACAGAATAGAGAATTCAGAAATAAGACTGCACT TCTATGACCATGTGATCTTAGACAAAACCT	83230 (26878)	1606 (633)
6.1076	AAAGGAAAACACAAAACACTGCTGAAAAGAAATCATTGACAACACAAAACAAATGGAAACAC ATCCCAAGATCATGGGTGGGTGGAATCAAT	83175 (33701)	8481 (1374)
6.66	ACACACATACCAACAGAACATGACAAAAAGAACAAAACCAGCCGCATGCATACTCGATGGAG ACAAAGGTAACTGCAGAAATGGTGAAGGAAGAACAGTCATTTAATGACAGTGTGGCT	82655 (12745)	4399 (447)
6.311	AACTAAGACAACAGATTGATTTACACTACTATTTTCACACAGCCAAAAATATCACTATGGCAA TCGTCAAAAGGTCAATTCAAAGATGGGACAGT	80492 (18081)	5907 (1125)
6.186	GATCAGCTTAGAATACAATGGAACAGAACAGATTAGAACAATGTGATTTTATTAGGGGCCAC AGCACTGTTGACTCAAGTACAAGTTCTGACTCATGTAGAACTAACACTTTT	80467 (15273)	1707 (250)
6.442	GAATGGAATCAAAATCGAATGAAATGGAATGGAATAGAAAGGAATGGAATGAAATGGAATGG AAAGGATTGCAAT	74575 (50360)	23666 (9200)
6.50	AAATGAACAAAACACTAGAGGAATGACATTACCTGACTTCAAATTATACTACAGAGCTATAGTA ACCAAAACAGCATGGTACAGGCAT	73003 (12983)	8932 (322)
6.399	GGACAACATACACAAATCAGTCAAGATACATCATTTCAACAGAATGAAAGACAAAAACCATT TGATCACTTCAATCGATGATGAAAAAGCA	69558 (46703)	9411 (639)
6.490	AACTTCAGCAAATTCTCAGGATACAAAATCAATGTGCAAAAACCACAAGCATTCTATACAC CAATAATAGACAGTGAGCCAAAT	68589 (20351)	4489 (734)
6.343	TATGACTTTTACAAATTACAGAAAAAGACACCCATTTGACAAGGGAACTGAAGGTGGTGAAG ACATACTGGCAGGCTAC	66255 (8868)	4661 (1124)
6.357	AACAGCAATAGACACAAAGTCAGCACTTACAGTACAAAACTAATGGCAAAAGCACATGAA GTGGGACAT	64424 (8153)	9645 (2317)
6.772	TGTAACACTGCAAACCATAAAAAACCGTAGAAGAAAACCTAGACAATACTATTTCAGGACATAG GCATGGGCCAAAGAC	64045 (34537)	1648 (698)
6.76	GAAGAAGAAAAAACATGGATATACAATGTCAACAGAAATCAAGGAGAAACGGAATTTACC AATCAATTTAGTGATCTGGGT	62346 (21837)	9671 (1318)
6.1269	AAAACACACAAACATACATGTGGATGCACATATAAACATGCACATACACACACATAAAATG CACAAACACACTTAACACAAGCACACATGCAAAACAAACACATGG	59271 (14754)	5206 (584)
6.305	TAGAAGGAATTTGATACATGCTCAGAAATACAGGCAAAGGAAGTAGGTGCCTGCCAGTGAAC ACAGGGGAACATATGGCTCCTA	58688 (5138)	503 (43)
6.500	TGACTAAACAGAGTTGAACAAGAACAAAAAGCAAATTTGCAGAAATGAAATACATACTAATT GAAAGTCCATGGACAGGCTCAACAGATGATATAGATACAGCTAAAGAGATAATTAGTGAAT GGATCAG	57734 (11364)	665 (74)
6.1069	AAGTAATAAGACTGAATTAGTAATACAAAGTGTCTCAACAAAGAAAATTCGCGGACTGTTCA TGCTCATGGACAGGAAGAATCAATATCATGAAAATGGCC	53552 (16206)	874 (116)
6.549	ACAGACAGAGATTTAAAAACAATAAAACAAGCAGTAAGCAAACACAGATAACAAAATGACATG ATCCAACAAATACTCAGAAGGAGACTTAGAAATGAATTGAGGGTC	46402 (9575)	4858 (1047)
6.1101	AGAAAAAACAAACAGCCCATTAAGAGGTAGACAAAGGACATGAACACTTTTCAAAAAGAG ACATACATGTGGCCAAACAGCATG	46384 (5081)	53165 (9180)
6.777	AAAAATGACCAGAGCAATAGAATGCATTGACCAGATAAAGACCTTCACGTATGTTGAACTAA AATGTGTGGTGCAGGTG	44955 (42030)	766 (227)
6.163	AATCAGTCTAGATCTTAAAGGAACACCAGAGGGAGTATTTAAATGTGCCCAATAAGCAAGAA TTATGGTGATGTGGAAGTA	44633 (20089)	337331 (861)
6.383	GAATGGAATGGAAAGGAATCGAAACGAAAGGAATGGAGACAGATGGAATGGAATGGAACAG AGAGCAATGG	44216 (35001)	6533 (875)
6.152	GGAATGGAATGAACACGAATGTAATGCAACCCAATAGAATGGAATCGAATGGCATGGAATAT AAAGAAATGGAATCGAAGAGAATGGAAACAAATGGAATGGAATTG	39388 (9448)	9731 (306)
6.962	AGGACATGAATAGACAATTCTAAAAGAGATACACAAGTGGCAAACAAACATGAAAAA AGACTCAACATTAGTAATGACCATGGAATGCAAAATC	38252 (16106)	1120 (35)
6.1016	TCCAGTCGATCATCATATAGTCAGCACTTATCATACACCAAGCCGTGTGCAAGGAAAGGGAA TACAACCATGAACATGATAGATGGATGGTT	31642 (19708)	1032 (311)

6.528	TACAGATAAGAAAATTGAGACTCAAGAGTATTACATAAATTGTTTCAGCTACCACAGCAAAA AATGGTATGGTTGGGAATCAAGCTCAGGG	31370 (16479)	5942 (717)
6.347	AGCCTATCAAAAAGTGGGCTAAGAATATGAATACACAATTCTCAAAAGAAGATATACAAATG GGCAACAAACATATGAAAACATACTCAACATCACTAATGATCAGGGAAATG	31038 (8160)	33165 (7324)
6.338	GAAAATGAACAATATGAACAAACAAACAAAATTACTACCCCTTACGAAAGTACGTGCATTCTA GTATGGTGACAAAAAGGAAAG	27626 (7158)	1480 (382)
6.662	ACATACGCAAAATCAATAAACATAATCCATCACATAAACAGAACCAAGACAAAAATCACATG ATTATCTCAATAGATGCAGAAAAGGCCTTCGAC	22515 (11632)	112305 (18518)
6.646	AAGAGTATCAACAGTAAATTACATTAGCAGAAGAATCAACAAACATGAAAATAGAAATTATG GTAGCCAAAGAACAG	16837 (3939)	17918 (652)

Supplementary Table 2.

The 411 clones obtained by Sanger sequencing after six rounds of mRNA display selection which matched with 85-99% identity to the reference human genome (hg18).

Clone ID	Sequence
6.1	AATCGAATGGAATCAACATCAAACGGAAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.5	GAAAGGAATAGAATGGAATGGATCGTTATGGAAAGACATCGAATGGGATGGAATTGACTCGAATGGATTGGACTGGAATG GAACGGACTCGAATGGAATGGACTGGAATG
6.8	TAAGCAATTTTCAGCAGTCTCAGGATACAAAAATCAATGTGCAAAAAATCACAAGCATTCTTATACACCAACAACAGACAAAC AGAGAGCCAAATCG
6.9	AACGGAATCAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGCCACGAATGGAATCATCTAATGGAATGG AATGGAATAATCCATGGACCCGAATG
6.14	ACATCAAACGGAATCAAACGGAATTATCGAATGGAATCGAAAAGAATCATCGAACGGACTCGAATGGAATCATCTAATGG AATGGAATGGAAG
6.18	ATCGAATGGAATCAACATCAAACGGAAAAAAACGGAATTATCAAATGGAATCGAAGAGAATCATCGAATGGACC
6.21	GAATAATCATTGAACGGAATCGAATGGAAACATCATCGAATGGAAACGAATGGAATCATCATCGAATGGAAATGAAAGG AGTCATC
6.23	CATCAAACGGAATCAAACGGAATTATCGAATGGAATCGAAAAGAATCATCGAACGGACTCGAATGGAATCATCTAATGGA ATGGAATGGAAGAATCCATGGACTCGAATG
6.24	AAACGGAATCAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACTCGAATGGAATCATCTAATGGAATGG AATGGAAGAATCCATGG
6.25	ATACACAAATCAATAAATGTAATCCAGCATATAAACAGAACCAAGACAAAAACCATATGATTATCTCAATGGATGCAGA AAAGGCC
6.26	AATCGAATAGAATCATCGAATGGACTCGAATGGAATCATCGAATGTAATGATGGAACAGTC
6.27	TGGAATGGAATCATCGCATAGAATCGAATGGAATTACCATCGAATGGGATCGAATGGTATCAACATCAAACGCAAAAAA CGGAATTATCGAATGGAATCGAAGAGAATCTTCGAACGGACCCG
6.28	ATGGAATGGAATGGAATGGAATTAAATGGAATGGAAAGGAATGGAATCGAATGGAAAGGAATC
6.30	GTCGAAATGAATAGAATGCAATCATCATCAAATGGAATCCAATGGAATCATCATCAAATAGAATCGAATGGAATCATCAA ATGGAATCGAATGGAGTCATTG
6.32	TGGAATTATCGAAAGCAAACGAATAGAATCATCGAATGGACTCGAATGGAATCATCGAATGGAATGGAATGGAACAG
6.34	AAAGGAATGGAATGCAATGGAATGCAATGGAATGCACAGGAATGGAATGGAATGGAATGGAAGGAATG
6.40	AATCTAATGGAATCAACATCAAACGGAAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.42	TACACAACAAAAAGAAATACTCAACACAGTAAACAGACAACCTTCAGAACAGGAGAAAAATTTTGCAAATACATCTAACAA AGGGCTAATATCCAGAATCT
6.44	TGCAATCCTAGTCTCAGATAAAACAGACATTAAACCAACAAAGATCAAAAGAGACAAAGAAGGCCATTAC
6.47	GAATCGAATGGAATCAACATCAAACGGAAAAAAACGGAATTATCGAATGGAATCGAAAAGAATCATCGAATGGACC
6.52	AATGGAATCGAATGGAATGCAATCCAATGGAATGGAATGCAATGCAATGGAATGGAATCGAACGGAATGCAGTGAAGG GAATGG
6.57	GAACACAGAAAAATTTCAAAGGAATAATCAACAGGGATTGATAACTAAGTGGATTTAGAGAGCCAAGGCAAAGAGAATC AAAGCACAGGGCCTGAGTCGGAG
6.61	AGTTGAATAGAACCAATCCGAATGAAATGGAATGGAATGGAACGGAATGGAATTGAATGGAATGGAATGGAATGCAATG GA
6.65	AACTCGATTGCAATGGAATGTAATGTAATGGAATGGAATGGAATTAACGCGAATAGAATGGAATGGAATGTAATGGAACG GAATGGAATG
6.67	AAGCGGAATAGAATTGAATCATCATTGAATGGAATCGAGTAGAATCATTGAAATCGAATGGAATCATAGAATGGAATCCA AT
6.68	AATGGAATCGAAAGGAATAGAATGGAATGGATCGTTATGGAAAGATATCGAATGGAATGGAATTGACTCGAATGGAATG GACTGGAATGGAACG
6.73	TAACGGAATAATCATCGAACAGAATCAAATGGAATCATCATTGAATGGAATTGAATGGAATCTTCGAATAGACATGAATG GACCATCATCG
6.74	AACGGAATCAAACGGAATTATCGAATGGAATCGAATAGAATCATCGAACGGACTCGAATGGAATCATCTAATGGAATGGA ATGGAAG
6.82	ATTGGAATGGAACGGAACAGAACGGAATGGAATGGAATAGAATGGAATGGAATGGAATGGTATGGAATGGAATGGAATG GTACG

6.83	AATCCACAAAGACAACAGAAGAAAAGACAACAGTAGACAAGGATGTCAACCACATTTTGGGAAGAGACAAGTAATCAAAC ACATGGCA
6.85	GAATCGAATGGAATCAACATCAAACGGAAAAAACCGGAATTATCGAATGGAATCGAAAAGAATCATCGAACGGACTCGA ATGGAATCATCTAATGGAATGGAATGGAAGAATCCATGG
6.88	AATGGAATCGAATGGAATCATCATCAAATGGAATCTAATGGAATCATTGAACGGAATTGGATGGAATCGTCAT
6.92	CAACATCAAACGGAAAAAACCGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.95	CACAACCAAAGCAATGAAAGAAAAGCACAGACTTATTGAAATGAAAGTACACACCACAGAATGGGAGCAGGCTCAAGCA AGC
6.96	ATCAAAGGGAATCAAGCGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACTCGAATGGAATCATGTGATGGA ATGGAATGGAATAATCCACGGACT
6.114	GGAATCGAATGGAATCAATATCAAACGGAGAAAAACCGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.116	AGGAATGGACACGAACCGGAATGCAATCGAATGGAATGGAATCTAATAGAAAGGAATTGAATGAAATGGACTGG
6.117	GGAAGGGAATCAAATGCAACAGAATGTAATGGAATGGAATGCAATGGAATGCAATGGAATGGAATGCAATGGAA TGG
6.119	AAATTGGATTGAATCGAATCGAATGGAAAAATGAAATCAAATGAAATGGAATGGAATCGAAATGAATGTAAACAATGG AATCCAATGGAATCCAATGGAATCGAATCAAATGGTTTTGAGTGGCGTAAAATG
6.121	AATGGAAGGGAATGGAATGGAATCGAATCGAATGGAACAGAATTCAATGGAATGGAATGGAATGGAATGGAATCGAATG GAATGG
6.125	GAAAAATCATTGAACGGAATCGAATGGAATCATCATCGGATGGAAACGAATGGAATCATCATCGAATGGAAATGAAAGG AGTCATC
6.126	GGAATCGAATGGAATCAACATCAAACGGAGAAAAACCGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.132	AAAGAAATGTCACGTGCGTATACACACACACGCACATACACACACCATGGAATACTACTCAGCTATACAAAGGAATGAAAT AATCCACAGCCAC
6.134	GGAATCGAATGGAATCAATATCAAACGGAAAAAACCGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.137	TGAACGGAATCGAATGGAATCATCATCGGATGGAAACGAATGGAATCATCATCGAATGGAAATGAAAGGAGTCATC
6.139	GAATAGAACGAAATGGAATGGAATGGAATGGAATGGAAGGAATGGAATGGAATGGAACG
6.147	TGGAATTATCGTGAATAGAATCGAATGGTATCAACATCAAACGGAAAAAACCGGAATTATCGAATGGAATCGAAGAGA ATCATCGAACGGACTCGAATGGAATCATCTAATGGAATGGAATGGAATAATCCATGG
6.148	GACAAAAAGAAATCATCATCGAATAGAATCAAATGGAATCTTTGAAATGGACTCAAAGGAATATCGTCAAATGGAATCAAA AGCCATCATCGAATGGACTGAAATGGAATTATCAAATGGACTCG
6.149	AACCAAACCAAGCAAAACAAACAAACAGTAAAAACTCAATAACAACCAACAAACAGGAAATACCAGGTAATTCAGATTAT CTAGTTATGTGCCATAGT
6.150	GAATGAATTGAATGCAAACATCGAATGGTCTCGAATGGAATCATCTTCAAATGGAATGGAATGGAATCATCGCATAGAAT CGAATGGAATTATCAACGAATGGAATCGAATGGAATCATCATCAGATGGAAATGAATGGAATCGTCAT
6.151	TGGAATGGAATCAAATCGCATGGAATCGAATGGAATAGAAAAGAATCAAACAGAGTGGAAATGGAATGGAATGGAATGGA ATCATGCGGAATGGAATG
6.153	AAATGGAATAATGAAATGGAATCGAACGGAATCATCATCAAAAGGAACCGAATGAAGTCATTGAATGGAATCAAAGGCA ATCATGGTCGAATGGAATCAAATGGAAACAGCATTGAATAGAATTGAATGGAGTCATCATGGAATCG
6.158	GAATTAACCCGAATAGAATGGAATGGAATGGAATGGAACAGAACGGAACGGAATGGAATGGAATGGAATGGAATGGAAT G
6.161	AAGATATACAAGCAGCCAACAAACATACGAAAGAATGCTCAACATCACTAATCCTCAGAGAAATTTAAATCAAAACCACA ATGAGTTACAATCTCATACCAGTCAGAAT
6.165	AGATAAGTGGATGAACAGATGGACAGATGGATGGATGGATGGATGGATGGATGGATGGATGGATGGATGGATGGATGGAT AGTAAGCTGGGTATA
6.175	AGAATTACAAACCACTGCTCAACAAAAATAAAGAGTACACAAACAAATGGAAGAATATTCCATGCTTATGGATAGGAAGA ATCAATATTGTGAAAATGGCCATACT
6.178	CATCGAATGGACTCGAATGGAATAATCATTGAACGGAATCGAAGGGAATCATCATCGGATGGAAACGAATGGAATCATCA TCGAATGGAATG
6.181	AAAGGAATCAAACGGAATTATCGAATGGAATCGAAAAGAATCATCGAACGGACTCGAATGGAATCATCTAATGGAATGG AATGGAAGAATCCATGGACTCGAATG
6.182	GGATATAACAAGAAAAACAATAATCACAACCTCAATCAAAGTGCAATGATGGTGCAAAATGCAAGTATGGTGGGGAC AGAGAAAGGATGC
6.184	AACATCAAACGGAAAAAACCGGAATATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.187	TAAAATGGAATCGAATGGAATCAACATCAAATGGAATCAAATGGAATCATTGAACGGAATTGAATGGAATCGTCAT

6.315	GAATAATCATTGAACGGAATCGAATGGAATCATCTTCGGATGGAAACGAATGGAATCATCATCGAATGGAAATGAAAGGA GTCATC
6.317	AATGGACTCGAATGGAATAATCATTGAACGGAATCGAATGGAATCATCATCGGATGGAAATGAGTGGAAATCATCATCGAA TGGAAATCG
6.319	AAATGAAATCGAACGGTAGGAATCGTACAGAACGGAAAGAAATGGAACGGAATGGAATGCAATCGAATGGAAAGGAGTC CAATGGAAGGGAATCGAAT
6.321	TACCAAACATTTAAAGAACAAATATCAATCCTACGCAAACCATTCTGAAACACAGAGATGGAGGATATACAGCGAAACTC ATTCTACATGGCC
6.323	TATTGGAATGGAATGGAATGGAGTCGAATGGAACGGAATGCACTCGAATGGAAGGCAATGCAATGGAATGCACTCAACA GGAATAGAAATGGAATGGAATGGAATGG
6.324	GGAATTTAATAGAATGTACCCGAATGGAACGGAATGGAATGGAATTGTATGGCATGGAATGGAA
6.326	GCAATCCAATAGAATGGAATCGAATGGCATGGAATATAAAGAAATGGAATCGAAGAGAATGGAGACAAATGGAATGGAA TTGAATGGAATGGAATTG
6.327	AATGGAATCGAATGGAATCATCATCAAATGGAATCTAATGGAATCATTGAACGGAATTTAAATGGAATCGTCATCGAATGA ATTCAATGCAATCAACGAATGGTCTCGAATGGAACCAC
6.334	AATTGCAAAAAGAAACACACATATACACATATAAACTCAAGAAAGACAAACTAACCTATGGTGATAGAAATCAGAAAA GTACAGTACATTGGTTGTCTTGGTGGG
6.335	TGACATCATTATTATCAAGAAACATTCTTACCACTGTTACCAACTTCCCAACACAGACTATGGAGAGAGAGATAAGACAGA ATAGCATT
6.339	AAAGAATTGAATTGAATAGAATCACCATGAATTGAATCGAATGGAATCGTCATCGAATGGAATCGAAGGGAATCATTGG ATGGGCTCA
6.342	ATCATCGAATGGAATCGAATGGAATCAATATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAATAGAATCATCGA ATGGACC
6.344	GAATGAAATCGTATAGAATCATCGAATGCAACTGAATGGAATCATTAAATGGACTTGAAAGGAATTATTATGGAATGGAA TTG
6.352	TAAGCAACTTCAGCAAAGTCTCAGGATACAAAATCAATGTGCAAAAATCTCAAGCATTCTTATACACGAACAACAGACAA ACAGAGAGCT
6.354	ACTCAAAAGGAATTGATTGGAATGGAATAGAATGGCAAGGAATAGTATTGAATTGAATGGAATGGAATGGACCCAAATG
6.356	GAATGGAATTTAAAGGAATAGAATGGAAGGAATCGGATGGAATGGAATGGAATAGAATGGAGTCGAATGGAATAGAATC GAATGGAATGGCATTG
6.358	TGAGAAAATGATGGAAGAGGAATAAAACGAAACAAAACCACAGGAACACAGGTGCATGTGAATGTGCACAGACAAA GATACAGGGCGGACTGGGAAGGAAGTTTCTGCACCAGAATTTGGGG
6.360	AACAAAAATGAGTCAAGCCTTAAATAAAATCAGAGCCAAAAAGAAGACATTACATCTGATAAGACAAAAATTCAAAG GACCATC
6.364	AACCCAGTGAATTGAATTGAATGGAATTGAATGGAATGGAAAGAATCAATCCGAGTCGAATGGAATGGTATGGAATGGA ATGGCATGGAATCAAC
6.367	ATCAACATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.369	AAGGAATGGAATGGTACGGAATAGAATGGAATGGAACGAATTGTAATGGAATGGAATTTAATGGAACGGAATGGAATGG AATGGAATCAACG
6.371	AACGGAATGGAAAGCAATTTAATCAAATGCAATACAGTGGGAATTGAAGGGAATGGAATGGAATGGC
6.373	AATCGAATGGAACGGAATAGAATAGACTCGAATGTAATGGATTGCTATGTAATTGATTGGAATGGAATGGAATCGAATGG AATGCAATCCAATGGAATGGAATGCAATGCAATGGAATGGAATCGAACGGAATGCAGTGGGAAGGGAATGG
6.374	TAGCAACATTTTAGTAACATGATAGAAACAAAACAGCAACATAGCAATGCAATAGTAACACAACAGCAACATCATAACAT GGCAGCA
6.379	AATGGAATCGAAGAGAATGGAAACAAATGGAATGGAATTGAATGGAATGGAATTGAATGGAATGGGAAGGAATGGAGTG
6.382	AGCAAACAAGTGAATAAACAAGCAAACAAGTGAACAAGCAAACAAGTGAATAAACAAGCAAACAAGTGAACAAGCAAA CAAGTGAATAAACAAGCAAACAAGTGAACAAGGAAACAAGTGAATAAACAAGGCTCT
6.387	AATGGAATCAACACGAGTGAATTGAATGGAATCGAATGGAATGGAATGGAATGGAATGAATTCAACCCGAATGGAATG GAAAGGAATGGAATC
6.389	GAATCGAATGGAATCAACATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.390	AACACGAATGTAATGCAATCCAATAGAATGGAATCGAATGGCATGGAATATAAAGAAATGGAATCGAAGAGAATGGAAA CAAACGGAATGGAATTGAATGGAATGGAATTGAATGGAATGGGAACGAATGGAGTGAAATTG
6.394	GAATGGAACGGAATAGAACAGACTCGAATGTAATGGATTGCTATGTAATTGATTGGAATGGAATGGAATCGAATGGAATG CAATCCAATGGAATGGAATGCAATGCAATGGAATGGAATCGAATGGAATGCAGTGGGAAGGGAATGG
6.395	GAATCGAATGGAATCAATATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC

6.532	AATGGAATTATCATCGAATGGAATCGAATGGAATCAACATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGA GAATCATCGAATGGACC
6.534	GTCAACACAGGACCAACATAGGACCAACACAGGGTCAACACAGGACCAACATAGGACCAACACAGGGTCAACACAAGAC CAACATGGGACCAACACAGGGTCAACATAGGACCAACATGGGACCAACACAGGGTCAACACAGGACCAAC
6.535	GAATCAACTCGATTGCAATCGAATGGAATGGAATGGTATTAACAGAATAGAATGGAATGGAATGGAATGGAACGGAACG
6.536	ACTCGAATGCAATCAACATCAAACGGAATCAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAACGGACTCGAAT GGAATCATCTAATGGAATGGAATGG
6.540	AATGGAATGGAATAATCGACGGACCCGAATGCAATCATCATCGTACAGAATCGAATGGAATCATCGAATGGACTGGAATG GAATGG
6.541	AATACAAACCACTGCTCAACGAAATAAAAGAGGATACAAACAAATGGAAGAACATTCTATGCTCATGGGTAGGATGAATT CATATCGTGAAAATGGCCATACTGCC
6.542	AAACACGCAAAACACACACACAAGCACACTACCACACAAGCGGACACACATGCAAAACACGCGAACACACACACATATACA CACAAGCACATTACAAAACACAAGCAAAACACCAGCAGACACACAAACACACAAACATACATGG
6.545	AATCGAACGGAATCAACATCAAACGGAAAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.547	TAATTGATTGCAATGGAATGGAATAGAATGGAATTGAATGGAATGGACCATAATGGATTGGACTTTAATAGAAAGGGCAT G
6.555	AGCAACTTCAGCAAAGTCTCAGGATACAAAATCAATGTACAAAAGTCACAAGCATTCTTATACACCAACAAAAGACAAAC AGAGAGCC
6.560	ACATCAAACGGAAAAAAAACAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.561	GAAATTCGAATTAATAATGAAATCGACTTATCTTAACAAATATAGCAATGCTGACAACACTTCTCCGGATATGGGTACTGCT
6.564	ACATCTCACTTTTAGTAATGAACAGATCATTGACAGAGAAATAGCAAAGAAACATCAGAGTTAACTACACTCTAAAC CAAATGGACCTA
6.570	GAAGAAAGCATTCAATCAAGACATCTAACTCGTTGATATAATGCATACAGTTCAAAATGATTACACTATCATTACATCTAG GGCTTTC
6.581	ACACACACATTCAAAGCAGCAATATTTACAACAGCCAAAAGGTGGAAACAATTGAGCAATTG
6.589	ATCATCGAATAGAATCGAATGGTATCAACACCAAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCTTCGA ACGGACC
6.59	ATCAACATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAACGGACC
6.595	AATCGAAAGGAATGTCATCGAATGGAATGGACTCAATGGAATAGAATCGGATGGAATGGCATCGAATGGAATGGAATG GAATTGGATGGAC
6.608	AACATGAACAGTGGAAACAATCAGTGAACCAATACAAGGGTTAAATAAGCTAGCAATTAAGAGCTGTACTGGTCTAAA GATAGAAGATCAAGTAGAAAATCAGCGCAAGAGGAAAGATATACGAAAACCTAATGGCC
6.609	CGAATGGAATCATTATGGAATGGAATGAAATGGAATAATCAAATGGAATTGAATGGAATCATCGAATGGAATCGAACAAA ATCCTCTTTGAATGGAATAAGATGGAATCACCAAATGGAATTG
6.610	AAGGGAATTGAATAGAATGAATCCGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATG
6.617	GAATGGAATCGAATCAAATTAATCAAATGGAATGCAATAGAAGGGAATACAATGGAATAGAATGGAATGGAATGGAAT GGACT
6.623	AAACGGAATCAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAACGGACTCGAATGGAATCATCTAATGGAATG GAATGGAAGAATCCATGGACT
6.625	ATGGAATCAACATCAAACGGAAAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACCAGAATGGA ATCATCTAATGGAATGGAATGG
6.627	AATGGAATCATCATCGAATGGAATCGAATGGAATCATGGAATGGAATCAAATGGAATCAAATGGAATCGAATGGAATGG AATGGAATG
6.629	AACGGAATCAAACGGAATTACCGAATGGAATCGAATAGAATCATCGAACGGACTCGAATGGAATCATCTAATGGAATGGA ATGGAAG
6.632	AAACGGAATCAAACGGAATTATCGAATGGAATCGAAAAGAAATCATCGAACGGACTCGAATGGAATCATCTAATGGAATG GAATGGAAGAATCCATGG
6.633	GAATGATACGGAATACAATGGAATGGAACGAAATGAAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGG
6.634	ACAGCAAGAGAGAAATAAAACGACAAGAAAACACAAAATGCCTATCAATAGTTACTTTAAATATCAGTGGACCAAATCA GTGAAACAAAAGACACAGAGTGGC
6.641	AATGGACTCGAATGGATTAATCATTGAACGGAATCGAATGGAATCATCATCGGATGGTAATGAATGGAATCATCATCGAA TGAATCGG
6.642	GAATGGAATCGAAAGGAATGTCATCGAATGGAATGGAATGGAACGGAATGGAATCGAATGGAATGGACTCGAATGGAAT AGAATCGAATGCAATGGCATCG
6.647	ATCGAATGGAATCAACATCAGACGGAAAAAAAACGGAATTATCAAATGGAATCGAAGAGAATCATCGAATGGACC

6.651	AGCAACTTCAGCAAAGTCTCAGGATACAAAATCAATGTGCAAAAATCAAAGCATTCTTATGCACCAATAACAGACACAGAGCCAAAT
6.655	AATGGAATGGAACGCAATTGAATGGAATGGAATGGAACGGAATCAACCTGAGTCAAATGGAATGGAATGGAATGGAATG
6.656	GGAACGAAATCGAATGGAACGGAATAGAATAGACTCGAATGTCATGGATTGCTATGTAATTGATTGGAATGGAATGGAATCG
6.660	TAGCAGGAAACAGCAAACCTCAAATTAAGTAAT7TCAAGAGCGTATCATCAATGAACTATTTTCAAAGATGTGGGCAAGAT
6.661	GAATTGAAAGGAATGTATTGGAATAAAATGGAATCGAATAGGTTGAAATACCATAGGTTGGAATGGAATGGAATGGGAGGACACCAATGGAATTG
6.668	AAGCAACTTCAGCAAAGTCTCGGGATACAAAATCAATGTGCAAAAATCACAAGCATTCTTATACACCACTAACAGACAAA TGGAGAGTC
6.681	GAATGGAATCAACATCAAACGGAAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACCAGAATGGAATCATCTAATGGAATGGAATGGAATAATCCATGG
6.683	AAAAGCAATTGGACTGATTTTAAATATACGTGGCAACAAGGATAAACTGCTAATGATGGGTTTGCAAATACAGATCG
6.686	AATGGAATCAACATCGAACGGAAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.688	AAACGGAATTATCAAATGGAATCGAAGAGAATCATCGAACGGACTCGAATGGAATCATCTAATGGAATGGAATGGAAG
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6.704	TAGAACAGAATTGAATGGAATGGCATCAAATGGAATGGAACGAAAGGAATGGAATTGAATGGACTCAAATGTTATGGAATCAAAGGGGAATGGACTC
6.705	AAGAGAATCATCGAATGGAATCGAATGGAATCAACATCAAACGGAAAAAAACGGAATTATCGAATGGAATCGAAGAGAA TCATCGAATGGACC
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6.724	ATCGAATGGAATCATTGAATGGAAGGAATGGAATCATCATGGAATGGAACGAATGGAATCACTGAATGGACTCGAATGGATCATCA
6.726	ATTACGCTTTAAAAAAGAAGACAGTCCTGTCATTTGTGACAATATGAATGAAACAGACATCACATTAAATGAAATGAGCCAGGCGCAG
6.727	GAATGAAATGAAATCAAATGGAATGTACATGAATGGAATAGAAAAGAATGCATCTTTCTCGAACGGAAGTGCATTGAATGAAAAGGAATCTACTGGAATGGATTGGAATGGAATGGGATGGAATGGTATGG
6.728	AACATCAAACGGAATCAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAACGGACTCGAATGGAATCATCTAATGGAATGGAATGGAAGAATCCATGGACTCGAATGCAATGCAATCATCATCGAATGAAATCGAATGGAATCATCGAATGGACTCG
6.729	ATGGAATCAATGGAATGGACATGAATGGAATGGACTTCAATGGAATGGTATCAAATGGAATGGAATTCAGT
6.730	AATGGAAAGGAATCGAATGGAAGGGAATGAAATTGAATCAACAGGAATGGAAGGGAATAGAATAGACGGCAATGGAATGGACTCG
6.732	AGCAACTTCAGCAAAGTATCAGGATACAAAATCAATGTACAAAAATCCCAAGCATTCTTATACACCAACAACAGACAAAACAGAGAGCC
6.733	AGCAACTTCAGCAAAGTCTCAGGATACAAAATCGATGTGCAAAAATCACAAGCATTCTTATACACCAACAACAGATAAACAGAGAGCC
6.740	AACGGAAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACCAGAATGGAATCATCTAATGGAATGGAATGGAATAATCCATGGACTCGAATG
6.742	GGAATCAAACGGAATTATCGAATGGAATCGAAGAGAATCATAGAACGGACTCAAATGGAATCATCTAATGGAATGGAATGGGAGAATCCATGGACTCGAATG
6.743	AATGGAATCAATATCAAACGGAAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.745	AACGGAATCAAACGGAATTATCGAATGGAATCGAAAAGAATCATCGAACGGACTCGAATGGAATCATCTAATGGAATGGAATGGAAGAATCCATGG
6.747	AAACGGAATTATCGAATGGAATCAAAGAGAATCATCGAATGGCCACGAATGGAATCATATAATGGAATGGAATGGAATAATCCATGGACC
6.749	AATGGAATCGAATGGATTGATATCAAATGGAATGGAATGGAAGGGAATGGAATGGAATGGAATGGAATGGAACCAATGTAATGATTTG
6.760	TAAAAGACGGAACAGATAGAAAGCAGAAAGGAAAGGTGAATTGCATTACCACTATTCATACTGCCACACACATGACATTAGGCCAAGTC
6.762	AATGGAATCGAATGGAACAATCAAATGGACTCCAATGGAGTCATCTAATGGAATCGAGTGAATCATCGAATGGACTCG

6.765	TAACACATAAAACAAACACAGAGACAAAATCTCCGAGATGTTAATCTGCTCCAGCAATACAGAACAATTTCTATTACCAAC AGAATGCCTTAATTTTTCTGCCT
6.766	GGAATCGAATGGAATCAACATCAAACGGAACGAAAAACGGAATTATCGAATGGAATCAAAGAGAATCATCGAATGGACC
6.768	AGAATGGAAAGGAATCGAAACGAAAGGAATGGAGACAGATGGAATGGAATG
6.771	GAATCATCATAAAATGGAATCGAATGGAATCAACATCAAATGGAATCAAATGGTCTCGAATGGAATCATCTTCAAATGGA ATGGAATGG
6.773	AACAACAATGACAAACAAACAACGACAAAAGACATTTATTTGGTTCACAAATCTCCAGGGTGTACAAGAAGCATGGTG CCAGCATCTGCTCAGCTTCTGATGAGGGCTCTGGGAAGCTTTACTC
6.776	AACGGACTCGAACGGAATATAATGGAATGGAATGGATTGGAAGGAATGGAATGGAATGGACAGGAAAAGAATTGAATG GGATTGGAATGGAATCG
6.781	AACATCAAACGAAATCAAACGGAATTATCAAATGAATCGAAGAGAATCATCGAATTGCCACGAATGCAATCATCTAATG GTATGGAATGGAATAATCCATGGACCCAGATG
6.787	AGAAATTAACAGCAAAAGAAGGATGCAGTGAACCTCAGGACAACACATACAATTCAAGCAACAAATGTATAGTGGCTGG GCACCAAGGATACAG
6.789	GCAATAAAATCGACTCAGATAGAGAAGAATGCAATGGAATGGAATGGAATGGAATGGAATGGGATGGAATGGTATGGAA TGG
6.797	AATGGACTCGAATGAAATCATCATCAAACGGAATCGAATGGAATCATTGAATGGAAAGGATGGGATCATCATGGAATGGA AACGAATGGAATCACTG
6.801	CCACATAAAACAAAACACTACAAGACAATGATAAAGTTCACAACATTAACACAATCAGTAATGGAAAAGCCTAGTCAATGGC AG
6.804	TGGAATGGAATGGAATGGAATCAAATCGCATGGTAATGAATCAAATGGAATCAAATCGAATGGAAATAATGGAATCGAA GGGAAACGAATGGAATCGAATTGCACTGATTCTACTGACTTCGAGGAAAATGAAATGAAATGCGGTGAAGTGAATGG
6.808	GAATGTTATGAAATCAACTCGAACGGAATGCAATAGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGG
6.813	AATGGAATCATTGAATGGAATGGAATGGAATCATCAAAGAAAGGAATCGAAGGGAATCATCGAATGGAATCAAACGGAA TCATCGAATGGAATGGAATGGAATG
6.815	GGAATCAACATCAAACGGAACGAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.816	GGAATAATCATCATCAAACAGAACCAATGGAATCATTGAATGGAATCAAAGGCAATCATGGTCGAATG
6.826	GCATAGAATCGAATGGAATTATCATTGAATGGAATCGAATGGAATCAACATCAAACGGAACGAAAAACGGAATTATCGAATG GAATCGAAGAGAAATCATCGAATGGACCC
6.827	AATGGAATCGAAGAGAATCATCGAACGGACTCGAATGGAATCATCTAATGGAATGGAATGGAATAATCCATGGACCCGAA TG
6.831	AAATGAATCGAATGGAATTGAATGGAATCAAATAGAACAAATGGAATCGAAATGAATCAAATGGAATCGAATCGAATGG AATTGAATGGCATGGAATTG
6.833	AGTTAATCCGAATAGAATGGAATGGAATGCAATGGAACGGAATGGAACGGAATGGAATGGAATGGAATGGAATGGAATG
6.836	ATCACAATCACACAACACATTGCACATGCATAACATGCACTCACAATACACACACAACACATACACACACATGCAAT ACAACACAAAACGCAACACAACATATACACAACACACAGCACACACATGCC
6.839	AAAGACTTAAACGTTAGACCTAAAACCATAAAAACCTAGAGGAAAACCTAGGCATTACCATTAGGACTTAGGCATGGG CAAGGAC
6.847	AAAGTCCAAAGATGAACAAAATATCCAGAAGGAAAACAAATGCACTTGGGGAGTGGGAAAGAAAACCAAGACTGAGCAA TGCGTCAAGCTCAGACGTGCCTCACTACG
6.849	AAACGGAATCAAACGGAATTATCGAATGGAGTCGAAAAGAAATCATCGAACGGACTCGAATGGAATCATCTAATGGAATG GAATGGAAGAATCCATGG
6.850	AATTGATTGGAATTAATGGAATTGAATGGAATGCAATCAAATGGAATGGAATGTAATGCAATGGAATGTAATAGAATGG AAAGCAATGGAATG
6.853	TACAGAACACATGACTCAACAACAGCAGAAAGCATATTCTTTTCAAATGCACATGAAACATTATCATGATGGACCAAAT
6.854	GGAACAAAATGAAATCGAACGGTAGGAATCATAACAGAACAGAAAGAAATGGAACGGAATGGAATG
6.855	AACGGAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGAATCGAATGGAGTCATCG
6.856	AATCGAACGGAATCAACATCAAACGGAACGAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.857	AGAATGGAATGCAATAGAATGGAATGCAATGGAATGGAGTCATCCGTAATGGAATGGAAAGGAATGCAATGGAATGGAA TGGAAATGG
6.858	ATGGAATCAACATCAAACGGAATCAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAACGGATTGGAATGGAATC ATCTAATGGAATGGAATGGAAGAATCCATGGACTCGAATGCAATCATCAGCGAATGGAATCGAATGGAATCATCGAATGG ACTCG
6.863	GGAATAAAACGGACTCAATAGTAATGGATTGCAATGTAATTGATTTCGATTTGGAATGGAATCGCATGGAATGTAATGGAA TGGAAATGGAATGGAAGGC

6.864	AATGGAATCAACATCAAACGGAAAAAACGGAATTATCGTATGGAATCGAAAAGAATTATCGAATGGACC
6.869	TCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.872	ACATCAAACGGAAATCAAACGGAAATTATCGAATGGAATCGAAAAGAATCATCGAACGGACTCGAATGGAATCATCTAATGG AATGGAATGGAAGAATCCATGGACTCGAATG
6.879	TGGAATCGAATGGAATCAACATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.885	AATGGAATCGAATGCAATCATCGAACGGAAATCGAATGGCATCACCGAATGGAATGGAATGGAATGGAATGGAATGG
6.891	AGAATTGATTGAATCCAAGTGAATTGAATGGAATGGAATGGATTAGAAAGGAATGGAATGGATTGGAATGGATTGGAAT GGAAAGG
6.895	AACTGCATCAACTAACAGGCAAAATAACCAGCTAATATCATAATGACAGGATTAAATTCACAAATGACAATATTAACCGT AAATGTAAATGGGCTA
6.898	GTAAACAAACAATCAAGCAAGTAAGAACAGAAATAACAGCATTGCGCTTTGAGTTAATGACAAGAACACTCGGCATGGG AGCCTGGGTGAGCAAATCACAGATCTTC
6.904	AAAGGAATGGACTGGAACAAAATGAAATCGAACGGTAGGAATCGTACAGAACGGACAGAAATGGAACGGCATGGAATGC ACTCG
6.905	GAATCAACCCGAGCGGAAAGGAATGGAATGGAATGGAATCAACACGAATGGAATGGAACGGAATGGAATGGGATGGGAT GAAATGGAATGG
6.919	AAGAAATGGAATCGAAGAGAATGGAAACAAACGGAATGGAATTGAATGGAATGGAATTGAATGGAATGGGA
6.923	GACATGCAAACACAACACACAGCACACATGGAACATGCATCAGACATGCAAACACAACACACATACCACACATGGCATAT GCATCAGACGTGCCTCACTAC
6.924	AAAGGAATGCACTCGAATGGAATGGACTTGAATGGAATGTCTCCGAATGGAACAGACTCGTATGAAATGGAATCGAATGG AATGGAATCAAATGGAATTGATTTGAGTGAAATGGAATCAAATGGAATGGCAACG
6.933	GGAACAAAATGAAATCGAACGGTAGGAATCGTACAGAACGGAAAGAAATGGAACGGAATGGAATGCACTCGAATGGAAA GGAGTCCAAT
6.938	AAATTGATTGAAATCATCATAAAATGGAATCGAAGGGAATCAACATCAAATGGAATCAAATGGAATCATTGAACGGAATT GAATGGAATCGTCAT
6.939	AGAATGGAAAGCAATAGAATGGAACGCACTGGATTGAGTGCAATGGAATCAATTGGAATGGAATCGAATGGAATGGAT TGGCA
6.940	AACACCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCTTCGAACGGACCCGAATGGGATCATCTAAT GGAATGGAATGGAATAATCCATGG
6.943	AATGGAGACTAATGTAATAGAATCAAATGGAATGGCATCGAATGGAATGGACTGGAATGGAATGTGCATGAATGGAATGG AATCGAATGGATTG
6.944	AAATCGAATGGAACGCAATAGAATAGACTCGAATGTAATGGATTGCTATGTAATTGATTGCAATGGAATGGAATCGACTG GAATGCAATCCAATGGAATGGAATGCAATGCAATGGAATGGAATCGAACGGAATGCAGTGGAAGGGAATGG
6.945	AATCAACAAGGAACTGAAACAAGTAAACAAGAAAAACAAATAACACCATAAAACATGGGCAAAGGACATAAACAGACATT TTTCAAAAAAGACATACAAATGGCCGAG
6.956	AATGGAATCAACATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACCCAGGCTGGT CTTGAATCC
6.963	ATTGAATGGGCTAGAATGGAATCATCTTTGAACGGAATCAAAGGGAATCATCATCGAATGGAATCGAATGGAAATGTCAA CG
6.965	AATGGACTCGAATGGAATCAACATCAAATGGAATCAAGCGGAATTATCGAATGAAATCGAAGAGAATCATCGAATGGACT CGAAAGGAATCATCTAATGGAATGGAATGGAATAATCCATGGACTCGAATGCAATCATCATCG
6.966	AAACGGAAAAAACGGAATTATTGAATGGAATCGAAGAGAATCTTCGAACGGACCCGAATGGAATCATCTAATGGAATG GAATGGAATAATCCATGG
6.969	ACTCGAGTGGAATTGACTGTAACAAAATGGAAGTAACGGATTGGAATCGAATGGAACGGAATGGAATGGAATGGACAT
6.972	TACAACTTTAAAAAATGATCAACAGATACACAGTTAGCAAGAAAGAATTGAGGGCAAAGAATATGCCAGACAACTCA AGAGGAAGATGATGGTAGAGATAGGTCACATTGGAGTGCA
6.975	AAATCAACAACAAACGGAAAAAAAAGGAATTATCGAATGGAATCAAAGAGAATCATCGAATGGACC
6.978	AACGGAATCAAACGGAATTATCGAATGGAATCGAAAAGAATCATCGAACGGACTCGAATGGAATCATCTAATGTAATGGA ATGGAAGAATCCATGGACTCGAATG
6.981	AACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACCAGAATGGAATCATCTAATGGAATGG AATGGAATAATCCATGGACTCGAATG
6.984	CAACATCAAACGGAAAAAACGGAATTATGGAATGGAATCGAAGAGAATCATCGAATGGACCCGAATGGAATCATCTGA AATATAATAGACTCGAAAGGAATG
6.988	ATGGAATCGAATGGAATGGACTGGAATGGAATGGATTGGAATGGAATCGAATGGAACAATATGGAATGGTACCAAATG
6.989	GAATGGAATCAACATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC

6.992	AAATGGACTCGAATGGAATCATCATAGAATGGAATCGAATGCAATGGAATGGAATCTTCCGGAATGGAATGGAATGGAATGGAATGGAG
6.997	GAATCATCATAAAATGGAATCGAATGGAATCAACATCAAATGGAATCAAATGGAATCATTGAACGGAATTGAATGGAATC GTCAT
6.1001	ATCGAATGGAATCAACATCAAACGGAAAAAACCGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.1012	AGCAACTTCAGCAAAGTCTCAGGATACAAAATCAATGTACAAAAATCACAAAGCATTCTTATACACCAATAACAGACAAAAC AGAGAGCCAAAA
6.1013	AGAAACAGAAAACAGTCAAACCAATGGGCAATCCATATCAGATGCAGTATTATGAACAGAAAGTGTAAGAATGCACCAG GCACAATGGC
6.1014	GATTGGAACGAAATCGAATGGAACGGAATAGAATAGACTCGAATGTAATGGATTGCTATGTAATTGATTGGAATGGAATG GAATCGAATGGAATGCAATCCAATGGAATGGAATGCAATGCAATGGAATGG
6.1015	ATGGAATGGAATAATCAACGTACTCGAATGCAATCATCATCGTATAGAATCGAATGGAATCATCGAATGGACTCGAATGG AATAATCATTGAACGGAGTCGAATGGAATCATCATCGGATGGAAAC
6.1024	AAAGAAATCGAATGGAATCAGTGTGCAATGGAATGGAATGGAATCGAAGAATTGAATTGAGTAGAATCGAAGGGAATCA TTGGATGGGCTCAAAT
6.1026	AGAAAAGATAACTCGATTAACAAATGAACAAACACCTGAATACACAAGTCTCAAAAGAAGACATAAAAAATGGCCAAC
6.1027	ATGGAATCAACATCAAACGGAATCACACGGAATTATCGAATGGAATCGAAAAGAATCATCGAACGGACTCGAATGGAATC ATCTAATGGAATGGAATGGAAG
6.1030	AATGGAATCAACATCAAACGGAATCAAGCGAAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACTCGAATGGAA TCATCTAATGGAATGGAATGGGAT
6.1034	AAACACAGTACAAATACTAATTCAAATCAAACCTTACTCAAAGTCATAATCAAACATGCCAGACGGGCTGAGGGGCAGCAT TA
6.1037	GGAATCGAGTGGAATCATCGAAAGAAATCGAATGGAATCATTGTGCAATGGAATGGAATGGAATCAAAGAATGGAATCG AAGGGAATCATTGGATGGGCT
6.1039	AAAGAAAGACAGAGAACAAACGTAATTCAAGATGACTGTTTACATATCCAAGAACATTAGATGGTCAAAGACTTTAAGAA GGAATACATTCAAAGGCAAAAAGTCATTACTGATTTTGGTGGAGTTTGCCACATGGAC
6.1045	GAAAGGAATCATCATTGAATGCAATCACATGGAATCATCACAGAATGGAATCGTACGGAATCATCATCGAATGGAATTGA ATGGAATCATCAATTGGACTCGAATGGAATCATCAAATGGAATCGATTGGAAGTGCAAATGGACTCG
6.1046	CAATCAGAGCGGACACAAACAAATTGCATGGGAAGAATCAATATCGTGAAAAATGGCC
6.1047	CAGCGCACCACAGCACACACAGTATACACATGACCCACAATACACACAACACACAACACATTACACACACCAC
6.1048	GCAAACAGAATTCAACACTACATTAGAACGATCATTCATCACGACCTAGTAGGATGTTTTCTGGGATGCAAGGATGGTT CAACAT
6.1052	CAATCAAAACAGCAATGAGATACCATTTTACACCAATCAAAATGGCTACTAAAAAGTCAAAAGCAAATGCC
6.1056	TGGAATAGAATGGAATCAATGTTAAGTGGGAATCGAGTGGGAATCATCGAAAGAAATCGAATGGAATCATTGTGCAATGGTA TGGAATGGAATCA
6.1057	AATGGAATGGAATCATCGCATAGAATGGAATGGAATTATCATCGAATTGAATCGAATGGTATCAACATCAAACGGAAAAA AACGGAAATATCGAATGGAATCGAAGAGAATCATCGAACGGACC
6.1067	GAAAAACAAAACAAAACAAAACAAACAATCAAAAAAGTGGTAGCAGAAACCAGAAAGTCCATGTATATAGCTAATT GGCCTGGTTGT
6.1070	AGACCTTTCTCAGAAGACACACAAATTGCCAACAGGTATATGAAAAAATGTTCAATATCACTAATCATCAGGGCGATGCC
6.1074	CATGGAATCGAATGGAATTATCATCGAATGGAATCGAATGGTACCAACACCAAACGGAAAAAACGGAATTATCGAATGG AATCGAAGAGAATCTTCGAACGGACC
6.1077	AGAGCAGAAACAAATGGAATTGAAATGAAGACAACAATCAAAAGCATCAATGAAATGAAAAGTTGGGTTTTGGAAGAGA GAAACAAT
6.1078	ACACAAACATAC
6.1097	AACAAACAAATGAGATGATTTCAGATAGTGATAAACACTATAACATAATTAATTCGTGCCAATCAGAGCATAACAGTGGT GTGGTGGCTGTGGAACAGATAGCAGAC
6.1100	AATGGAATCGAGTGGGAATGGAAGCAATGGAATAGAATGGAATGGAATCGAAAGGAACGGAATGGAATGGAATGGAATG
6.1103	AGAAATGGAATCGGAGAGAATGGAACAAATGGAATGGAATTGAATGGAATGGAATGGAATGGAATGGGAACG
6.1107	AAGAGAACTGCAAAACACTGCTCAAAGAAATCAGAGATGACAAAAACACATGGAAAAACGTTTCATGCTCATGGATTGG AAGACTTA
6.1116	AATCAACACGAATAGAATGGAACGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAGTGGGAATGGAACAGAATGGAGTG GAAT
6.1117	AACATCAAACGAAATCAAACGGAATTATCAAATTGAATCGAAGAGAATCATCGAATTGCCACGAATGCAACCATCTAATG GTATGGAATGGAATAATCCATGGACCCAGATG

6.1226	AATCAAATGGAATGAAATCGAATGGAATTGAATCGAATGGAATGCAATAGAATGTCTTCAAATGGAATCGAATGGAAATT GGTGAAGTGGACGGGAGTG
6.1227	TAATGGAATCAACATCAAACGGAAAAAACGGAATTATCGAATGCAATCGAAGAGAATCATCGAATGGACC
6.1233	AGCAACTTCAGCAAAGTCTCAGCATACAAAATCAATGTGCAAAAATCACACGCATTCTATACACCAATAACAGACAAAC AGAGAGCC
6.1234	GAATCAAATGGAATGGACTGTAATGGAATGGATTGCAATGGAATCGAATGGAGTGGACTCAAATGGAATG
6.1237	AACAAGTGGACGAAGGATATGAACAGACACTTCTCAAGACATTTATGCAGCCAACAGACACACGAAAAAATGCTCATCAT CACTGGCCATCAG
6.1240	AAACGGAAAAAACGGAATTATCGAATGGAATCGAATAGAATCATCGAATGGACC
6.1242	TGGAACCGAACAAAGTCATCACCGAATGGAATTGAAATGAATCATAATCGAATGGAATCAAATGGCATCTCGAATTGAC TCGAATGCAATCATCCACTGGGCTT
6.1247	AACGGAATCACGCGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACTCGAATGGAATCATCTAATGGAATGGA ATGG
6.1254	GGAATCAACTCGATTGCAATGGAATGCAATGGAAAGGAATGGAATGCAATTAAGCGAATAGAATGGAATGGAATGGAA TGGAACGGAATGGAATG
6.1262	AAAACAAACAACAACGACAAATCATGAGACCAGAGTTAAGAAACAATGAGACCAGGCTGGGTGTGGTG
6.1264	AATCGAAAGGAATGCAATATTATTGAACAGAATCGAAAAGAATGGAATCAAATGGAATGGAACAGAGTGGAATGGACTG C
6.1265	AAGGAATCGAATGGAAGTGAATGAAATTGAATCAACGGAATGGAAGGGAATAGAATAGACTGTAATGGAATGGACTCG
6.1266	AACCCGAGTGCAATAGAATGGAATCGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAATGGAGTC
6.1267	GAATGGAATTGAAAGGAATGGAATGCAATGGAATGGAATGGGATGGAATGGAATGCAATGGAATCAACTCGATTGCAAT G
6.1270	GAAAAAACGGAATTATCGAATTGAATCAAATAGAATCATCGAACGGACCAAAATGGAATCATCTAATGGAATGGAATG GAATAATCCATGGACTCTAATG
6.1271	TGGAATCATCTAATGGAATGGAATGGAATAATCCATGGACTCGAATGCAATCATCATAAAATGGAATCGAATGGAATCAA CATCAAATGGAATCAAATGGGATCATTGAACGGAATTGAATGGAATCGTCAT
6.1272	GAAAAAACGGAATTATCGAATTGAATCGAATAGAATCATCGAACGGACCAGAATGGAATCATCTAATGGAATGGAATG GAATAATCCATGGACTCGAATG
6.1273	AACCACTGCTTAAGGAAATAAGAGAGAACACAAACAAATGGAAAAACGTTCCATGCTCATGGATAGGAGAATCAATATC GTGAAAAATGGCC
6.1278	TATCGAATGGAATGGAAGGAGTGGAGTAGACTCGAATAGAATGGACTGGAATGAAATAGATTGCAATGGAATGGAATG GAATGAAGTGGACTCG
6.1279	GTATCAACATCAAACGGAAAAAACGGAATTATCGAATGGAATCATCTAATGGAATGGAATGGAATAATCCATGGACTCG AATG
6.1281	TAAATGGAGACATCATTGAATACAATTGAATGGAATCATCACATGGAATCGAATGGAATCATCGTAAATGCAATCAAGTG GAATCAT
6.1282	GAATGGAATTGAAAGGTATCAACACCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAACG GACC
6.1283	AGCAATTTCAGCAAAGTCTCAGGATACAAAATCAATGTACAAATTCACAAGCATTCTTATGGACCAACAACAG
6.1284	GGAATCGAATGGCATCAACATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAATGGAATCATC
6.1288	AAACAAAACACAGAAATGCAAAGACAAAACATAAACGCAGCCATAAAGGACATATTTAGATAACTGGGGAAATTTGT ATGGGCTGTGT
6.1290	AATGGAATCAACATCAAACGGAATCAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAACGGACTCGAATGGAA TCATCTAATGGAATGGAATGGAAG
6.1291	AATCGAATGGAATCAGCATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.1292	AAACGGAATTATAGAATGGACTGGAAGAGAATCATCGAACGGACTAGAATGGAATCATCTAATCGAATGGAATGGAACA ATCCATGGTCTAGCA
6.1295	TGAACAGAGAATTGGACAAAACGCACAAAGTAAAGAAAAAGAATGAAGCAACAAAAGCAGAGATTTATTGAAAACAAA AGTACACACCACACAGGGTGGGAGTGG
6.1298	ATCATAACGACAAGAACAATTCACACACAACAATATTAACCTCAAATCCAAATGGGTAAATGCTCCAATTAAAGGATG CAGACGGGCAAATTGGATA
6.1299	ATCATAACGACAAGAACAATTCACACACAACAATATTAACCTCAAATCCAAATGGGTAAATGCTCCAATTAAAGGATG CAGACGGGCAAATTGGATA
6.1300	GAATGGAATCGAATGGATTGATATCAACTGGAATGGAATGGAAGGGAATGGAATGGAATGGAATTGAACCAAATGTAAT GACTTGAATGGAATG

6.1303	GAATCAACATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.1308	GGAATCAACATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.1311	ATGGAATCAACATCAAACGGAAATCAAACGGAATTATCGAATGGAATCAAAGAGAATCATCGAACGGACTCGAATGGAATCATCTAATGGAATGGAATGGAAGAATCCATGGACTCGAATGCAATCATCATCGAAT
6.1314	GGAATGGAATGGAATGGAGCCGAATGGAATGGAATGTACTCAAATGGAATGC
6.1316	AAAACACCTAGGAATACAGATAACAAGGGACATTAACCTCTTAAAGAGAACTACAAACCACTGCTCAAGGAAATGAGAGAGGACACAAACACATGGAAAAACATTCCATCCTCATGGATAGGAAGAATCAATATTGTGAAAAATGGCC
6.1317	AACACGACTTTGAGAAGAGTAAGTGATTGTTAATTAAAGCAAGAGAATTATTGATGTATCACAGTCATGAGAAATATTGGAAGGAATATGGTCCATAC
6.1319	ACACATATCAAACAAACAAAAGCAATTGACTATCTAGAAATGTCTGGGAAATGGCAAGATATTACA
6.1323	GGAATCATCATATAATGGAATCGAATGGAATCAACATCAAATGGAATCAAATGGAATCATTGAACGGAATTGAATGGAATCGTCAT
6.1324	AATGGAATCAACATCAAACGGAAATCAAATGGAATTATCGAATGGAATCGAAGAGAATCATCGAATTGTCACGAATGGAATCATCTAATGGAATGGAATGGAATAATCCATGGCCCCATGC
6.1327	AATGGACTCGAATGAAATCATCATCAAACAGAATCGAATGGAATCATCTAATGGAATGGAATGGCATAATCCATGGACTCGAATG
6.1331	TAAAATGAAACAAATATACAAACACGAAGGTTATCACCGAGAAATATGCCAAAACCTTAAATATGAGAATAAGACAGTCTCAGGGGCCACAGAG
6.1334	AAAATACAGCGTTATGAAAAGAATGAACACACACACACACACACACACAGAAAATGT
6.1335	CAAACAAATAGGTACCAAACAAATAACAACATAAACCTGACAACACACTTATTTACAAGAGACATCCCTTATATGAAAGGTACAGAAAAGTCGATGGTAAGATGATGGGGAAAGGTATACCAACCACTAGCAGAAGG
6.1336	TGGAATCGAATGGAATCAATATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAAAGAATCATCGAATGGGCCC GAATGGAATCATCT
6.1342	ACAAATGGAATCAACAACGAATGGAATCGAATGGAACGCCATCGAAAGGAAACGAATGGAATTATCATGAAATTGAAATGGATG
6.1346	AATCAATAAATGTAAACCAGCATATAAACAGAACCAACGACAAAAACCACATGATTATCTCAATAGATGCAGAAAAGGCC
6.1352	AAAATAAACGCAAATTTAAATCACAAGATACCAACACATTCCCACGGCTAAGTACGAAGAACAGGGCGAATGGTCAGATTAAGCTCAAACCT
6.1354	CAACATCAAACGGAAATCAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACTCGAATGGAATCATCTAATGGAATGGAATGGAAG
6.1355	ACATCAAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAATGGACC
6.1356	AATGGACTCGAATAGAATTGACTGGAATGGAATGGACTCGAATGGAATGGAATGGAATGGAAGGGACTCG
6.1364	AAGAAAGACAGAGAACAAACGTAATTCAAGATGACTGATTACATATCCAAGAACATTAGATGGTCAAAGACTTTAAGAAGGAATACATTCAAAGGCCAAAACGTCACCTACTGATTTTGGTGGAGTTTGCCACATGGAC
6.1365	GAATGGAATCGAATGGAATGAACATCAAACGGAAAAAACGGAATTATCGAATGGAATCAAAGAGAATCATCGAATGGAACCCG
6.1373	ATGGACTCGAATGTAATAATCATTGAACGGAATCGAATGGAATCATCATCGGATGGAAACGAATGGAATCATCATCGAATGGAATCGAATGGGATC
6.1375	GAAATGGAATGGAAAGGAATAAAATCAAGTGAAATTGGATGGAATGGATTGGAATGGATTGGAATG
6.1378	AAACGGAAAAAACGGAATTATCGAATGGAATCGAAGAGAATCATCGAACGAACCAGAATGGAATCATCTAATGGAATGGAATGGAATAATCCATGG
6.1379	ATTAACCCGAATAGAATGGAATGGAATGGAATGGAACGGAACGGAATGGAATGGAATGGAATGGAATGGAATGGATCG
6.1380	AACATCAAACGGAAAAAACGGAATTATCGTATGGAATCGAAGAGAATCATCGAATGGACC
6.1382	GAATAGAATTGAATCATCATTTGAATGGAATCGAGTAGAATCATTGAAATCGAATGGAATCATCATCGAATGGAATGGGTGGAATC
6.1383	CACCGAATAGAATCGAATGGAACAATCATCGAATGGACTCAAATGGAATTATCCTCAAATGGAATCGAATGGAATTATCGAATGCAATCGAATAGAATCATCGAATAGACTCGAATGGAATCATCGAATGGAATGGAATGGAACAGTC
6.1384	AAATCATCATCGAATGGAATCGAATGGTATCATTGAATGGAATCGAATGGAATCATCATCAGATGGAAATGAATGGAATCGTCAT
6.1386	GAATGGAATCGAAAGGAATAGAATGGAATGGATCGTTATGGAAAGACATCGAATGGAATGGAATTGACTCGAATGGAATGGACTGGAATGGAACG

Supplementary Table 3.

Translation enhancing activity of 12 selected TEEs following 6 rounds of mRNA display selection. Activity was calculated as fold enhancement over results obtained when using a 13-nt unstructured (no insert) sequence in place of the TEE, $n = 2$.

Fold Enhancement (\pm SD)				
Clone ID	No hairpin		Hairpin	
	In cells	Cell lysate	In cells	Cell lysate
6.100	182 \pm 4	90 \pm 1	235 \pm 9	36 \pm 3
6.340	160 \pm 14	33 \pm 2	76 \pm 3	24 \pm 4
6.400	87 \pm 2	27 \pm 1	156 \pm 22	41 \pm 4
6.675	252 \pm 17	100 \pm 4	258 \pm 10	26 \pm 3
6.694	278 \pm 11	184 \pm 8	151 \pm 10	75 \pm 13
6.721	80 \pm 8	80 \pm 2	60 \pm 12	60 \pm 2
6.757	149 \pm 10	129 \pm 3	59 \pm 2	84 \pm 7
6.825	191 \pm 11	26 \pm 2	135 \pm 6	41 \pm 11
6.878	137 \pm 5	49 \pm 3	220 \pm 18	75 \pm 10
6.884	146 \pm 13	106 \pm 2	183 \pm 17	113 \pm 21
6.967	325 \pm 55	240 \pm 4	99 \pm 9	113 \pm 5
6.1267	203 \pm 16	110 \pm 2	368 \pm 37	92 \pm 26

Supplementary Table 4.

Outputs from each step of the sequence processing pipeline: (a) raw Illumina reads, (b) after primer trimming, (c) after genome mapping, (d) after peak calling, (e) after enrichment estimation, and (f) after repeat masking.

(a)			library	reads	bases
	Raw Illumina Reads		R0	44,444,004	3,555,520,320
			R6	15,822,677	1,265,814,160
(b)			library	reads	bases
	Primer Trimmed		R0	37,844,023	2,214,081,562
			R6	15,487,289	880,257,653
(c)	Aligned to Genome	Single Copy	R0	30,344,547	1,812,193,574
			R6	8,208,028	467,542,238
		Low Copy	R0	4,665,039	259,320,667
			R6	3,834,883	204,430,440
		High Copy	R0	1,815,116	111,163,504
			R6	1,444,416	86,354,599
		Unaligned	R0	1,019,321	31,403,817
			R6	1,999,962	121,930,376
(d)	Peak Calling			reads	peaks
		Single Copy		4,833,027	18,353
		Low Copy		3,041,808	4,544
		High Copy		799,386	8,267
(e)	Enrichment	Single Copy	≥10		17,349
			≥100		3,662
			≥1,000		495
		Low Copy	≥10		4,246
			≥100		1,020
			≥1,000		113
		High Copy	≥10		7,949
			≥100		745
			≥1,000		44
(f)	Repeats Masked	Single Copy			peaks
			≥10		12,278
			≥100		2,291
			≥1,000		312