

バクテリア・植物プラスチドのコードン表 [no.11]

(The Bacterial and Plant Platid Code)

コードン表11はバクテリア、古細菌、原核ウィルス、葉緑体タンパク質に用いられる。標準コードと同様、開始コードンはAUGが最も翻訳効率が高い。加えて、GUGやUUGによる開始も古細菌やバクテリアで報告されている¹⁾。*E. coli*では、タンパク質の約3%のタンパク質の開始にUUGが用いられているという²⁾。CUGは*E. coli*のプラスミドにコードされたタンパク質(RepA)の開始コードンとして知られている³⁾。NUGによる開始に加え、バクテリアに稀なケースとして、AUUによる開始があり、これはpoly(A)ポリメラーゼPcnBや開始因子IF3をコードしているInfCに見られる⁴⁾。アミノ酸に対するコードンの割り当ては標準コードと同様だが、枯草菌⁵⁾においてTrpの翻訳効率は低い⁶⁾。

Non	T		C		A		G		2nd	
T	TTT	Phe	TCT	Ser	TAT	Tyr	TGT	Cys		T
	TTC	Phe	TCC	Ser	TAC	Tyr	TGC	Cys		C
	TTA	Leu	TCA	Ser	TAA	TER	TGA	TER		A
	TTG	Leu	TCG	Ser	TAG	TER	TGG	Trp		G
C	CTT	Leu	CCT	Pro	CAT	His	CGT	Arg	3rd	Symplus
	CTC	Leu	CCC	Pro	CAC	His	CGC	Arg		
	CTA	Leu	CCA	Pro	CAA	Gln	CGA	Arg		
	CTG	Leu	CCG	Pro	CAG	Gln	CGG	Arg		
A	ATT	Ile	ACT	Thr	AAT	Asn	AGT	Ser		
	ATC	Ile	ACC	Thr	AAC	Asn	AGC	Ser		
	ATA	Ile	ACA	Thr	AAA	Lys	AGA	Arg		
	ATG	Met	ACG	Thr	AAG	Lys	AGG	Arg		
G	GTT	Val	GCT	Ala	GAT	Asp	GGT	Gly		
	GTC	Val	GCC	Ala	GAC	Asp	GGC	Gly		
	GTA	Val	GCA	Ala	GAA	Glu	GGA	Gly		
	1st GTG	Val	GCG	Ala	GAG	Glu	GGG	Gly		

コードン

1)

Comparison of initiation of protein synthesis in procaryotes, eucaryotes, and organelles.

Kozak M

Microbiol Rev47p1-45(1983 Mar)

The cloning and sequence analysis of the aspC and tyrB genes from Escherichia coli K12.

Comparison of the primary structures of the aspartate aminotransferase and aromatic aminotransferase of E. coli with those of the pig aspartate aminotransferase isoenzymes.

Fotheringham IG, Dacey SA, Taylor PP, Smith TJ, Hunter MG, Finlay ME, Primrose SB, Parker DM, Edwards RM

Biochem J234p593-604(1986 Mar 15)

TTG serves as an initiation codon for the ribosomal protein MvaS7 from the archaeon Methanococcus vannielii.

Golderer G, Dlaska M, Gröbner P, Piendl W

J Bacteriol177p5994-6(1995 Oct)

Organization and growth phase-dependent transcription of methane genes in two regions of the Methanobacterium thermoautotrophicum genome.

Nölling J, Pihl TD, Vriesema A, Reeve JN

J Bacteriol177p2460-8(1995 May)

Sequence features surrounding the translation initiation sites assigned on the genome sequence of Synechocystis sp. strain PCC6803 by amino-terminal protein sequencing.

Sazuka T, Ohara O

DNA Res3p225-32(1996 Aug 31)

[Molecular cloning, sequencing and expression in Escherichia coli of the poly\(3-hydroxyalkanoate\) synthesis genes from Alcaligenes latus DSM1124.](#)

Genser KF, Renner G, Schwab H
J Biotechnol64p125-35(1998 Oct 8)

[Cloning and characterization of sanO, a gene involved in nikkomycin biosynthesis in Streptomyces ansochromogenes.](#)

Wang G, Nie L, Tan H
Lett Appl Microbiol37p452-7(2003)

2)

[The complete genome sequence of Escherichia coli K-12.](#)

Blattner FR, Plunkett G 3rd, Bloch CA, Perna NT, Burland V, Riley M, Collado-Vides J, Glasner JD, Rode CK, Mayhew GF, Gregor J, Davis NW, Kirkpatrick HA, Goeden MA, Rose DJ, Mau B, Shao Y
Science277p1453-62(1997 Sep 5)

3)

[Expression and regulation of the RepA protein of the RepFIB replicon from plasmid P307.](#)

Spiers AJ, Bergquist PL
J Bacteriol174p7533-41(1992 Dec)

4)

[Programmed translational frameshifting and initiation at an AUU codon in gene expression of bacterial insertion sequence IS911.](#)

Polard P, Prère MF, Chandler M, Fayet O
J Mol Biol222p465-77(1991 Dec 5)

[Molecular cloning and sequencing of infC, the gene encoding translation initiation factor IF3, from four enterobacterial species.](#)

Liveris D, Schwartz JJ, Geertman R, Schwartz I
FEMS Microbiol Lett112p211-6(1993 Sep 1)

[Sequence features surrounding the translation initiation sites assigned on the genome sequence of Synechocystis sp. strain PCC6803 by amino-terminal protein sequencing.](#)

Sazuka T, Ohara O
DNA Res3p225-32(1996 Aug 31)

[Expression of the Escherichia coli pcnB gene is translationally limited using an inefficient start codon: a second chromosomal example of translation initiated at AUU.](#)

Binns N, Masters M
Mol Microbiol44p1287-98(2002 Jun)

5)

おそらくE.coliでも

6)

[UGA: a split personality in the universal genetic code.](#)

Hatfield D, Diamond A
Trends Genet9p69-70(1993 Mar)

[UGA: a dual signal for 'stop' and for recoding in protein synthesis.](#)

Tate WP, Mansell JB, Mannering SA, Irvine JH, Major LL, Wilson DN
Biochemistry (Mosc)64p1342-53(1999 Dec)

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