

Table 2 Amino acid usage versus anaerobic expression data across the entire proteome

Amino acid	Anaerobic cost	Transcript abundance		Protein abundance		CAI	
		r_s	Z	r_s	Z	r_s	Z
Gly	01.0	+0.27***	+20.9***	+0.30***	+11.7***	+0.17***	+10.6***
Ser	01.0	-0.18***	-07.2***	-0.25***	-04.8***	-0.28***	-25.0***
Ala	02.0	+0.39***	+32.3***	+0.38***	+13.2***	+0.34***	+30.5***
Glu	02.0	-0.08	-06.5	+0.03	+00.8	+0.14***	+16.9***
Asp	03.0	-0.07	-04.2	+0.01	+01.0	+0.17***	+16.2***
Gln	03.0	-0.11***	-03.8	-0.11	-01.6	-0.06**	+01.8
Leu	04.0	-0.09***	-05.9***	-0.20***	-04.5***	-0.18***	-11.7***
Val	04.0	+0.27***	+17.0***	+0.16**	+04.2***	+0.22***	+11.9***
His	05.0	-0.09***	-04.0***	-0.02	-01.7	-0.07***	-04.0**
Asn	06.0	-0.30***	-19.9***	-0.23***	-06.4***	-0.20***	-12.6***
Pro	07.0	+0.05	+03.8	+0.03	+0.20	-0.09***	-09.5***
Tyr	08.0	+0.00*	+01.0	+0.00	+01.0	-0.00	+01.8
Thr	09.0	+0.03	+04.3	+0.02	-0.60	-0.05*	-02.2
Phe	10.0	+0.01	+02.0	-0.06	-2.83	-0.01	-1.04
Lys	12.0	-0.09	-12.4*	-0.09	-04.4***	+0.09***	+07.5***
Arg	13.0	-0.11***	-04.4***	-0.03	-00.7	-0.20***	-13.0***
Cys	13.0	-0.07***	-05.7***	-0.07	-02.1	-0.16***	-14.3***
Ile	14.0	-0.07***	-06.1***	-0.02	-02.4	-0.09***	-06.1***
Trp	14.0	+0.02	+02.5*	-0.09	-01.6	-0.01	+00.8
Met	24.0	+0.00	+03.1*	-0.04	-0.87	-0.06**	-00.6

Note: Anaerobic cost—high-energy phosphate bonds ($\sim\text{PO}_4$); CAI—codon adaptation index; r_s —Spearman rank correlation between amino acid abundance and expression data; Z—Mantel-Haenszel Z-score. Amino acids sorted according to aerobic cost. Costs taken from Wagner (2005). * $p < 0.05$, ** $p < 0.005$, and *** $p < 0.0005$, sequential Bonferroni test, two-tailed