

Table 1 Amino acid usage versus aerobic expression data across the entire proteome

Amino acid	Aerobic cost	Transcript abundance		Protein abundance		CAI	
		r_s	Z	r_s	Z	r_s	Z
Glu	09.5	-0.01	-00.8	+0.12***	+13.5***	+0.11***	+13.0***
Gln	10.5	-0.08***	-01.5	-0.08***	-02.2	-0.10***	-01.3
Ala	14.5	+0.42***	+38.9***	+0.36***	+26.6***	+0.34***	+31.0***
Gly	14.5	+0.31***	+29.6***	+0.23***	+15.9***	+0.18***	+12.4***
Pro	14.5	-0.04	-01.1	-0.09***	-09.9***	-0.05*	-06.0***
Ser	14.5	-0.26***	-16.8***	-0.29***	-25.5***	-0.29***	-26.4***
Asp	15.5	-0.04	-02.4	+0.07***	+07.6***	+0.15***	+14.1***
Asn	18.5	-0.32***	-23.7***	-0.27***	-17.3***	-0.23***	-15.8***
Arg	20.5	-0.11***	-06.9***	-0.12***	-07.7***	-0.18***	-11.6***
Thr	21.5	-0.03	+01.2	-0.07**	-04.4***	-0.03	-00.3
Cys	26.5	-0.14***	-07.4***	-0.09***	-05.4***	-0.14***	-12.4***
His	29.0	-0.13***	-05.1***	-0.12***	-08.7***	-0.06**	-03.0*
Val	29.0	+0.30***	+20.6***	+0.27***	+15.6***	+0.22***	+12.4***
Lys	36.0	+0.00	-03.5*	+0.04	+04.5***	+0.09***	+06.7***
Met	36.5	-0.00	+03.0*	-0.08***	-03.3*	-0.05*	-00.3
Leu	37.0	-0.14***	-11.5***	-0.07**	+00.1	-0.17***	-10.9***
Ile	38.0	-0.10***	-08.4***	-0.03	-00.5	-0.07***	-04.9***
Tyr	59.0	-0.05*	-01.2	-0.02	-01.5	+0.00	+02.2
Phe	61.0	-0.04	+01.7	-0.02	-1.44	+0.01	+0.09
Trp	75.5	-0.01	+03.4*	-0.03	-00.9	+0.01	+02.4

Note: Aerobic cost—high-energy phosphate bonds (\sim PO₄); 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