

Table 1. Characteristics of flux distributions producing the 20 amino acids from glucose, glycerol, and acetate

AA ^{a)}	Glucose			Glycerol			Acetate					
	ATP cons. ^{b)}	Yields ^{c)} (mol/mol)			ATP cons.	Yields (mol/mol)			ATP cons.	Yields (mol/mol)		
		Manual	LP Std	LP UE		Manual	LP Std	LP UE		Manual	LP Std	LP UE
Ala	-1	2.00	2.00	2.00	-3	1.00	1.00	1.00	-1	0.50	0.50	0.50
Arg	0	1.00	0.89	1.33	-4	0.50	0.51	0.67	5	0.27	0.25	0.33
Asn	2	1.73	1.74	2.00	0	1.00	1.00	1.00	1	0.47	0.47	0.50
Asp	0	2.00	1.86	2.00	-2	1.00	1.00	1.00	-1	0.50	0.50	0.50
Cys	8	1.24	1.03	2.00	6	0.71	0.60	1.00	8	0.32	0.27	0.50
Glu	-7	1.00	1.15	1.33	-11	0.50	0.60	0.67	-2	0.33	0.33	0.33
Gln	-6	1.00	1.19	1.33	-10	0.50	0.61	0.67	-1	0.33	0.33	0.33
Gly	-2	2.00	2.73	4.00	-4	1.00	1.54	2.00	-2	0.50	0.71	1.00
His	3	0.75	0.89	1.20	4.33	0.42	0.49	0.60	7.67	0.19	0.22	0.30
Ile	7	0.79	0.75	1.00	3	0.45	0.44	0.50	6	0.21	0.20	0.25
Leu	-9	0.67	0.75	0.80	-15	0.33	0.38	0.40	-5	0.20	0.20	0.20
Lys	5	0.84	0.80	1.00	1	0.48	0.47	0.50	4	0.22	0.21	0.25
Met	18	0.71	0.62	2.00	16	0.40	0.36	1.00	17	0.19	0.16	0.50
Phe	0	0.57	0.56	0.60	-4.33	0.30	0.30	0.30	2.33	0.14	0.14	0.15
Pro	-2	1.00	1.01	1.33	-6	0.50	0.57	0.67	3	0.29	0.29	0.33
Ser	-2	2.00	2.00	2.00	-4	1.00	1.00	1.00	-2	0.50	0.50	0.50
Thr	6	1.37	1.30	2.00	4	0.78	0.75	1.00	5	0.37	0.35	0.50
Trp	-1	0.44	0.47	0.50	-2	0.25	0.25	0.25	6	0.11	0.12	0.13
Tyr	-2	0.57	0.58	0.60	-6.33	0.30	0.30	0.30	0.33	0.15	0.15	0.15
Val	-2	1.00	1.00	1.00	-6	0.50	0.50	0.50	-2	0.25	0.25	0.25

a) Amino acids.

b) ATP cons. indicates the number of ATP consumed according to the manual calculations for each carbon source as indicated on the top of the rows (assuming 1 NADH = 1 NADPH = 2 FADH = 2 ATP).

c) Yields corresponds to yields obtained from different computation schemes for flux distributions: Manual corresponds to manual computation, LP Std corresponds to LP using the standard formulation (LP standard) and LP UE corresponds to linear programming assuming unlimited energy supply (LP unlimited energy). For information about the ATP consumption for LP standard and LP unlimited energy see Supporting information, Tables S3–S5.