




Table S1 - Experimental data from Fig. 1A

From Fig. 1A – using a linear-regression fit to all three data sets: $\kappa_t = 4.5 \pm 0.2$ μg total protein/ μg RNA/h; $r_0 = 0.087 \pm 0.009$ μg RNA/ μg total protein. Error is displayed as \pm the error associated with the linear fit. The R-protein fraction is related to the RNA/protein ratio by the conversion: $\phi_R = \rho \cdot r$, with $\rho = 0.76$ μg protein / μg RNA (see Eq. [S1]).

Medium ^a	Growth rate λ (h) ^b	RNA/Protein ($\mu\text{g}/\mu\text{g}$)	Source	Symbol
M63+glyc	0.40 \pm 0.03 (2)	0.177 \pm 0.006 (2)	This study	
M63+gluc	0.57 \pm 0.02 (5)	0.230 \pm 0.014 (2)		
cAA+glyc	0.71 \pm 0.03 (4)	0.224 \pm 0.029 (3)		
cAA+gluc	1.00 \pm 0.05 (5)	0.287 \pm 0.009 (3)		
RDM+glyc	1.31 \pm 0.07 (3)	0.414 \pm 0.058 (3)		
RDM+gluc	1.58 \pm 0.15 (3)	0.466 \pm 0.033 (3)		
TRIS + acetate	0.38	0.189 ^c	Forchhammer & Lindahl (Ref. (45))	
TRIS + succ	0.60	0.224		
TRIS + gluc	1.04	0.295		
TRIS + cAA+ gluc	1.46	0.421		
FL Broth	1.73	0.469		
Med. C + succ	0.42	0.200 ^d	Bremer & Dennis (Ref. (14))	
Med. C + glyc	0.69	0.255		
Med. C + gluc	1.04	0.331		
Med. C +AA+ glyc	1.39	0.391		
Med. C + AA+gluc	1.73	0.471		

a. Abbreviations: **M63+glyc** – Miller's M63 (10) +0.5% (v/v) glycerol; **M63+gluc** - M63+0.5% (w/v) glucose; **cAA+glyc** - M63+0.5% (v/v) glycerol+0.2% (w/v) casamino acids; **cAA+gluc** - M63+0.5% (w/v) glucose+0.2% (w/v) casamino acids; **RDM+glyc** - Neidhardt's rich defined media (11) +0.5% (v/v) glycerol; **RDM+gluc** - Neidhardt's rich defined media+0.5% (w/v) glucose; **TRIS** – Tris buffered with 0.2% of the indicated carbon source; **TRIS+cAA** – TRIS buffer with 0.75% (w/v) casamino acids; **FL Broth** – TRIS buffer with 0.2% glucose, 1% meat extract, 1% peptone and 0.5% yeast extract; **Med. C** – Phosphate buffer with 0.2% (w/v) of the indicated carbon source (46); **Med. C +AA** – Medium C supplemented with all amino acids >50 $\mu\text{g}/\text{ml}$, in proportion to the molar concentrations in *E. coli* protein.

b. Error is displayed as \pm standard deviation among replicates. Number of replicates (done on different days) is shown in parentheses.

c. Using the estimate that 86% of total RNA is rRNA (13).

d. Using the estimate that there are 5.6×10^{15} amino acid residues per μg of protein, and that the average molecular weight of an RNA nucleotide is 324 (14).