

Simulation parameters for Fig. 4 (including Figure supplement)

Parameter	Value	Note
Stall site identity	CTA, CTC, CTT, TCG	
Stall site locations (codon number along <i>yfp</i>)	46 (6), 68 (10), 141 (14), 201 (18), 147 (5 for Ser TCG)	Different sites were chosen as indicated in title and schematic.
tRNA accommodation rate at CTA68 (TJ model)	0.07s^{-1}	Fit from experiment
tRNA accommodation rate at CTA141 (TJ model)	0.12s^{-1}	Fit from experiment
tRNA accommodation rate at CTA201 (TJ model)	0.107s^{-1}	Fit from experiment
tRNA accommodation rate at CTA46 (TJ model)	0.091s^{-1}	Fit from experiment
tRNA accommodation rate at CTC68 (TJ model)	0.184s^{-1}	Fit from experiment
tRNA accommodation rate at CTC141 (TJ model)	0.211s^{-1}	Fit from experiment
tRNA accommodation rate at CTT68 (TJ model)	0.0949s^{-1}	Fit from experiment
tRNA accommodation rate at CTT46 (TJ model)	0.133s^{-1}	Fit from experiment
tRNA accommodation rate at CTA68 (CSAT model)	0.0896s^{-1}	Fit from experiment
tRNA accommodation rate at CTA141 (CSAT model)	0.173s^{-1}	Fit from experiment
tRNA accommodation rate at CTA201 (CSAT model)	0.154s^{-1}	Fit from experiment
tRNA accommodation rate at CTA46 (CSAT model)	0.129s^{-1}	Fit from experiment
tRNA accommodation rate at CTC68 (CSAT model)	0.344s^{-1}	Fit from experiment
tRNA accommodation rate at CTC141 (CSAT model)	0.444s^{-1}	Fit from experiment
tRNA accommodation rate at CTT68 (CSAT model)	0.135s^{-1}	Fit from experiment
tRNA accommodation rate at CTT46 (CSAT model)	0.205s^{-1}	Fit from experiment
tRNA accommodation rate at CTA68 (SAT model)	0.292s^{-1}	Fit from experiment
tRNA accommodation rate at CTA141 (SAT model)	0.637s^{-1}	Fit from experiment
tRNA accommodation rate at CTA201 (SAT model)	0.55s^{-1}	Fit from experiment
tRNA accommodation rate at CTA46 (SAT model)	0.444s^{-1}	Fit from experiment
tRNA accommodation rate at CTC68 (SAT model)	1.45s^{-1}	Fit from experiment
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Parameter	Value	Note
tRNA accommodation rate at CTC141 (SAT model)	1.83s^{-1}	Fit from experiment
tRNA accommodation rate at CTT68 (SAT model)	0.469s^{-1}	Fit from experiment
tRNA accommodation rate at CTT46 (SAT model)	0.713s^{-1}	Fit from experiment
tRNA accommodation rate at TCG147 (TJ model)	0.273s^{-1}	Fit from experiment
tRNA accommodation rate at TCG147 (CSAT model)	0.767s^{-1}	Fit from experiment
tRNA accommodation rate at TCG147 (SAT model)	4.59s^{-1}	Fit from experiment
Initiation rate of variant 1	0.101s^{-1}	Fit from experiment
Initiation rate of variant 2	0.143s^{-1}	Fit from experiment
Initiation rate of variant 3	0.219s^{-1}	Fit from experiment
Initiation rate of variant 4	0.3s^{-1}	Default value
Initiation rate of variant 5	0.334s^{-1}	Fit from experiment

All other parameters have values shown in Supplementary File 6.