





0.4 0.0 0.2 0.6 8.0 Growth rate μ (h⁻¹)

maintenance_fun constant

keep_ribosome_kcat FALSE keep_transport_kcat FALSE

	tC	tC2	BGAL	ATPS	EAA	ENT	RNAp	DNAp	r
С	1	0	1	-1	-1	-0.45	Ö	Ö	0
C2	0	1	-1	0	0	0	0	0	0
AA	0	0	0	0	1	-0.45	0	0	-0.8
NT	0	0	0	0	0	1	-1	-1	0
ATP	0	0	0	0.5	0	-0.1	0	0	-0.2
RNA	0	0	0	0	0	0	1	0	0
DNA	0	0	0	0	0	0	0	1	0
р	0	0	0	0	0	0	0	0	1

	tC	tC2	BGAL	ATPS	EAA	ENT	RNAp	DNAp	r
x_C	0.1	0	0	0	0	0	0	0	0
x_C2	0	0.2	0	0	0	0	0	0	0
x_W	0	0	0	0	0	0	0	0	0
С	0	0	0	11	11	11	0	0	0
C2	0	0	1	0	0	0	0	0	0
AA	0	0	0	0	0	2	0	0	2
NT	0	0	0	0	0	0	1	1	0
ATP	0	0	0	0	0	2	0	0	2
RNA	0	0	0	0	0	0	0	0	0
DNA	0	0	0	0	0	0	0	0	0
р	0	0	0	0	0	0	0	0	0

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	tC	tC2	BGAL	AIPS	EAA	ENI	RNAp	DNAp	r
x_C	0	0	0	0	0	0	Ō	Ō	0
x_C2	0	0	0	0	0	0	0	0	0
x_W	0	0	0	0	0	0	0	0	0
С	0	0	0	0	0	0	0	0	0
C2	0	0	0	0	0	0	0	0	0
AA	0	0	0	0	0	0	0	0	0
NT	0	0	0	0	0	0	0	0	0
ATP	0	0	0	0	0	0	0	0	0
RNA	0	0	0	0	0	0	0	0	25
DNA	0	0	0	0	0	0	4	4	0
р	0	0	0	0	0	0	0	0	0

kcat

	[,1]	[,2]	[,3]	[,4]	[,5]	[,6]	[,7]	[,8]	[,9]
kcatf									
kcatb	0	0	0	0	0	0	0	0	0

Keq



minimal phi constraint

[1,]

minimal f constraint

	[,1]	[,2]	[,3]	[,4]	[,5]	[,6]	[,7]	[,8]	[,9]
[1,]	Ō	Ō	Ō	Ō	Ō	Ō	Ō	[8,] 0	Ō