





0.8 0.8 0.6 0.4 0.4 0.6 0.8 1.0 Growth rate μ (h<sup>-1</sup>)

maintenance\_fun constant

keep\_ribosome\_kcat FALSE keep\_transport\_kcat FALSE

	tC	FERM	RESP	ADPS	EAA	ENT	RNAp	DNAp	r
С	1	-0.4	-0.2	0	0	0	0	0	0
I	0	0.2	0.1	0	-1	-0.167	0	0	0
AA	0	0	0	0	1	-0.167	0	0	-0.2
NT	0	0	0	-1	0	0.334	-1	-1	0
ADP	0	-0.6	-0.8	1	0	0.666	0	0	8.0
ATP	0	0.6	0.8	0	0	-0.666	0	0	-0.8
rRNA	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	0.2

	tC	FERM	RESP	ADPS	EAA	ENT	RNAp	DNAp	r
x_C	0.1	0	0	0	0	0	Ō	Ō	0
$x_W$	0	0	0	0	0	0	0	0	0
С	0	0.25	5	0	0	0	0	0	0
I	0	0	0	0	3	3	0	0	0
AA	0	0	0	0	0	3	0	0	3
NT	0	0	0	2	0	0	2	2	0
ADP	0	0.05	1	0	0	0	0	0	0
ATP	0	0	0	0	0	3	0	0	3
rRNA	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	GLY	RESP	ADPS	EAA	ENI	RNAp	DNAp	r
x_C	0	0	0	0	0	0	Ō	Ō	0
$x_W$	0	0	0	0	0	0	0	0	0
С	0	0	0	0	0	0	0	0	0
I	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
ADP	0	0	0	0	0	0	0	0	0
ATP	0	0	0	0	0	0	0	0	0
rRNA	0	0	0	0	0	0	0	0	40
DNA	0	0	0	0	0	0	4	4	0
р	0	0	0	0	0	0	0	0	0

#### kcat

	tC	FERM	RESP	ADPS	EAA	ENT	RNAp	DNAp	r	
kcatf kcatb	56		254	26	7	149	6	13	19	

#### Keq



## phi input

				[,4]						
[1,]	0.065	0.035	0.035	0.003	0.248	0.032	0.119	0.003	0.46	

## average saturation input

# minimal phi constraint

[1,]

### minimal f constraint

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