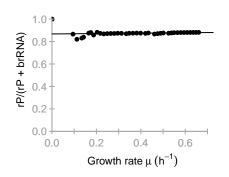
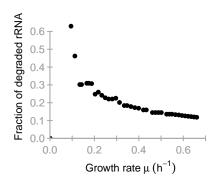
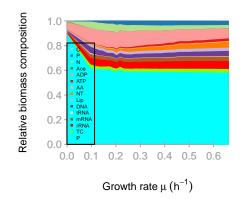
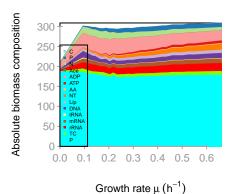


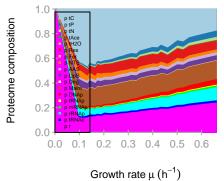
### Protein mass fraction in ribosome

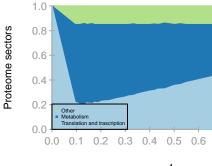












Growth rate  $\mu$  (h<sup>-1</sup>)

	tC	tΡ	tN	tAce	tH2O	Res	Fer	NTS	AAS	LipS	Deg	Maint	DNAp	tRNAp	mRNAp	rRNAp	tRNAc	r
С	1	0	0	0	0	-0.002	-0.02	-0.17	-0.76	-0.112	ō	0	Ö	Ö	Ö	Ö	0	0
P	0	1	0	0	0	-0.124	-0.12	0.05	0	0.102	0	0	0	0	0	0	0	0
N	0	0	1	0	0	0	0	-0.08	-0.24	-0.004	0	0	0	0	0	0	0	0
Ace	0	0	0	-1	0	0.002	0.02	0	0	0	0	0	0	0	0	0	0	0
H2O	0	0	0	0	1	0.072	0.07	-0.06	0	-0.064	0	0	0	0	0	0	0	0
ADP	0	0	0	0	0	-0.874	0.91	0.67	0	0.774	0	1	0	0	0	0	0.1	0.1
ATP	0	0	0	0	0	0.926	-0.86	-0.69	0	-0.82	0	-1	0	0	0	0	-0.1	-0.1
AA	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	-0.2	0
NT	0	0	0	0	0	0	0	0.28	0	0	1	0	-1	-1	-1	-1	0	0
Lip	0	0	0	0	0	0	0	0	0	0.124	0	0	0	0	0	0	0	0
DNA	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
tRNA	0	0	0	0	0	0	0	0	0	0	-0.1	0	0	1	0	0	-0.7	0.1
mRNA	0	0	0	0	0	0	0	0	0	0	-0.1	0	0	0	1	0	0	0
rRNA	0	0	0	0	0	0	0	0	0	0	-0.8	0	0	0	0	1	0	0
TC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	-0.9
Р	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8.0

	tC	tP	tN	tAce	tH2O	Res	Fer	NTS	AAS	LipS	Deg	Maint	DNAp	tRNAp	mRNAp	rRNAp	tRNAc	r
x_C	1	0	0	0	0	0	0	0	0	0	ō	0	Ö	Ö	Ö	Ö	0	0
x_P	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
x_N	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
x_Ace	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
x_H2O	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
_ C	1	0	0	0	0	0.9	1	1	1	1	0	0	0	0	0	0	0	0
P	0	0	0	0	0	0.9	1	0	0	0	0	0	0	0	0	0	0	0
N	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0
Ace	0	0	0	1	0	0.9	1	0	0	0	0	0	0	0	0	0	0	0
H2O	0	0	0	0	0	801	890	890	0	890	0	0	0	0	0	0	0	0
ADP	0	0	0	0	0	11.7	13	13	0	0	0	13	0	0	0	0	0	13
ATP	0	0	0	0	0	0.9	1	1	0	1	0	1	0	0	0	0	1	1
AA	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
AA NT	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	1	0	0
Lip	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
DNA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
tRNA	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0
mRNA	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
rRNA	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0
TC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Р	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	tC	tP	tN	tAce	tH2O	Res	Fer	NTS	AAS	LipS	Deg	Maint	DNAp	RNAp	mRNAp	rRNAp	tRNAc	r
x_C	0	0	0	0	0	0	0	0	0	0	Ō	0	0	0	0	0	0	0
x_P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
x_N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
x_Ace	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
x_H2O	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
С	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ace	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H2O ADP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ADP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ATP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AA NT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lip	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DNÀ	0	0	0	0	0	0	0	0	0	0	0	0	10	10	10	10	0	0
tRNA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
mRNA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
rRNA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50
TC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Р	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

### kcat

	tC	tP	tN	tAce	tH2O	Res	Fer	NTS	AAS	LipS	Deg	Maint	DNAp	tRNAp	mRNAp	rRNAp	tRNAc	r
kcatf	14	16	29	10	47570	192	384	897	20	37	10	10	2	150	10	2	200	20
keath	- 1	2	2	1	1757	10	30	00	2	4	Λ	0	0	0	0	0	0	Λ

## Keq



# phi input

**[,8]** 0.05 **[,9]** 0.05 **[,10]** 0.02 **[,11]** 0.01 **[,12]** 0.2 **[,14]** 0.01

**[,13]** 0.01 **[,15]** 0.01 **[,16]** 0.02 **[,17]** 0.05 **[,18]** 0.25

**[,7]** 0.15

**[,5]** 1e-04

**[,6]** 0.1

**[,4]** 0.001

**[,3]** 0.01

[1,]

average saturation input

minimal phi coi	nstraint
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[1,]

minimal f constraint

[,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10] [,11] [,12] [,13] [,14] [,15] [,16] [,17] [,18] 0 0 0 0 0,7 0 0 0 0 0 0 0 0 0 0 0 0 0

[1,]

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