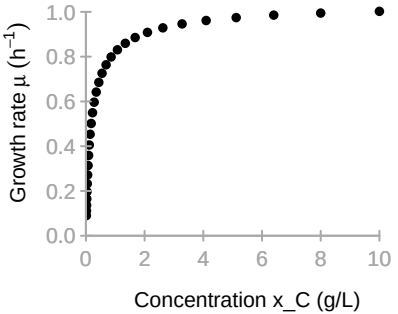
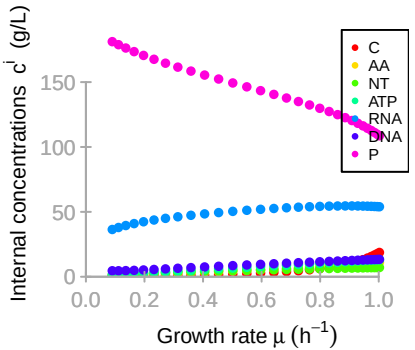
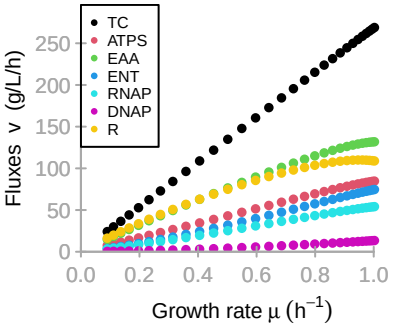
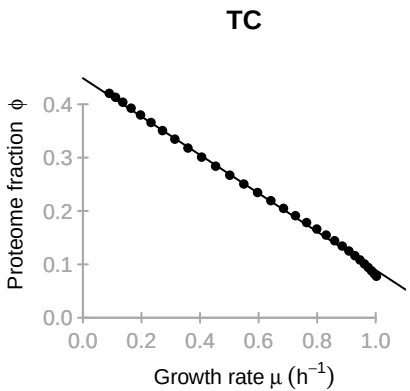
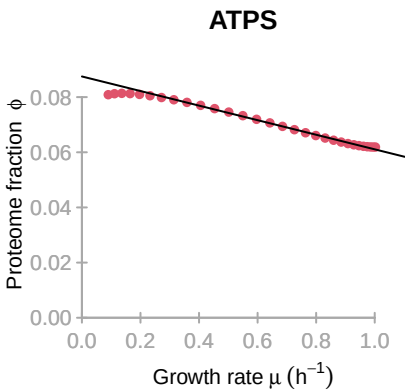
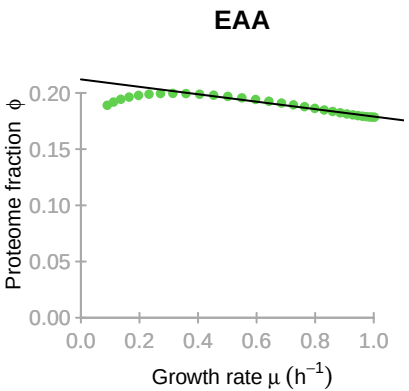

Growth rate μ (h^{-1})
Concentration x_C (g/L)

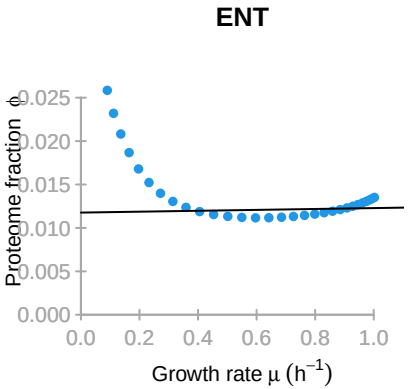

Internal concentrations c^{i} (g/L)
Growth rate μ (h^{-1})
C
AA
NT
ATP
RNA
DNA
P

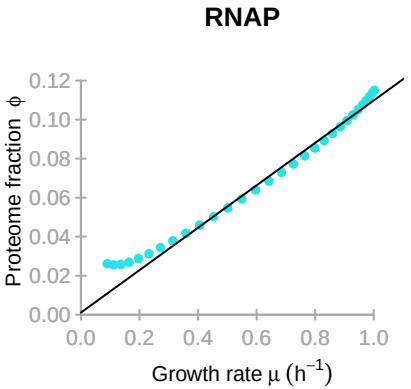

Fluxes v (g/L/h)
Growth rate μ (h^{-1})
TC
ATPS
EAA
ENT
RNAP
DNAP
R

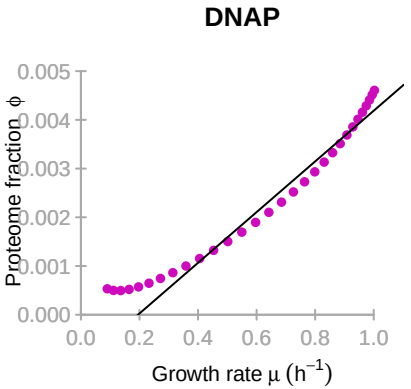

TC
Proteome fraction ϕ
Growth rate μ (h^{-1})

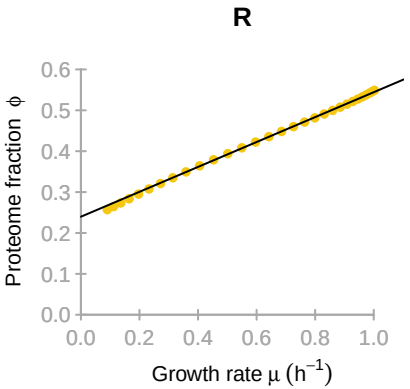

ATPS
Proteome fraction ϕ
Growth rate μ (h^{-1})

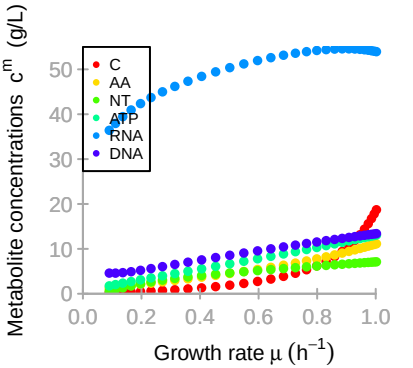

EAA
Proteome fraction ϕ
Growth rate μ (h^{-1})

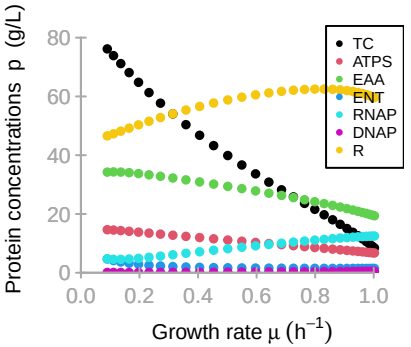

ENT
Proteome fraction ϕ
0.025
0.020
0.015
0.010
0.005
0.000
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)

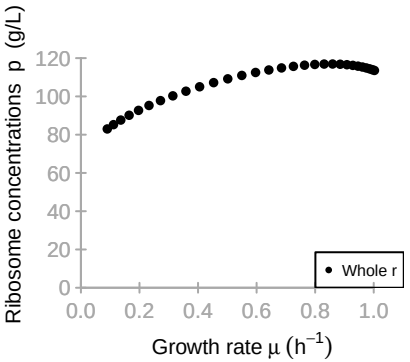

RNAP
Proteome fraction ϕ
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)

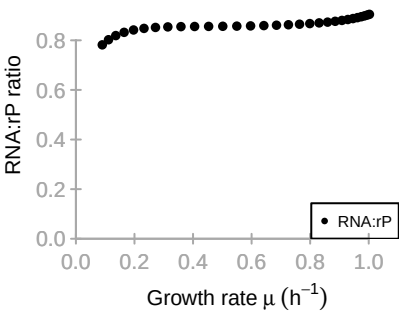

DNAP
Proteome fraction ϕ
0.005
0.004
0.003
0.002
0.001
0.000
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)

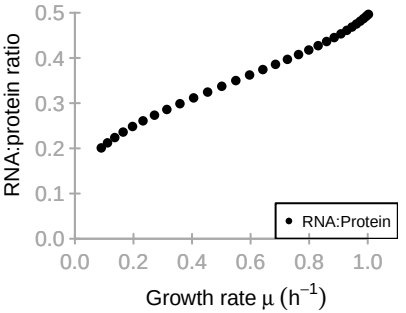

R
Proteome fraction ϕ
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)

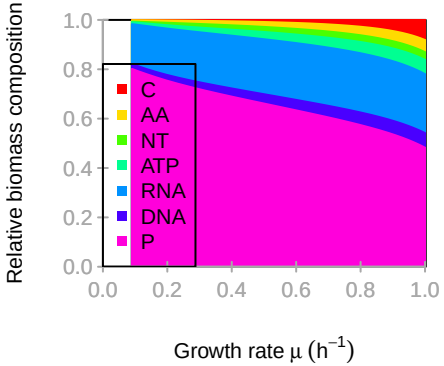

Metabolite concentrations cm (g/L)
C
AA
NT
ATP
RNA
DNA
50
40
30
20
10
0
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)

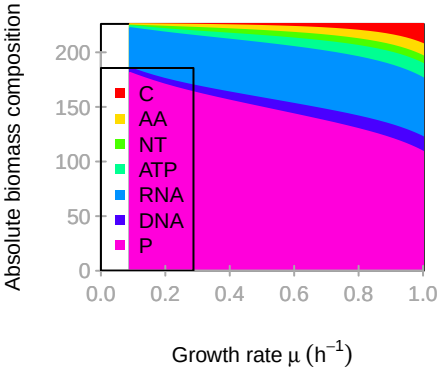

Protein concentrations p (g/L)
TC
ATPS
EAA
ENT
RNAP
DNAP
R
80
60
40
20
0
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)

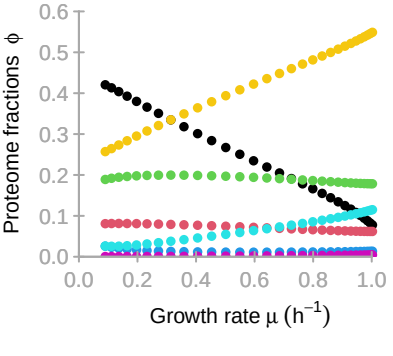

Ribosome concentrations p (g/L)
120
100
80
60
40
20
0
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)
Whole r

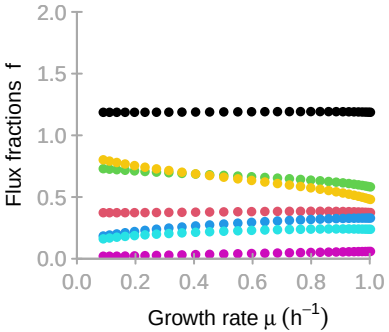

RNA:rP ratio
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)
RNA:rP

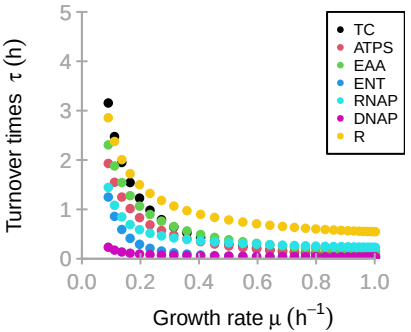

RNA:protein ratio
0.5
0.4
0.3
0.2
0.1
0.0
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)
RNA:Protein

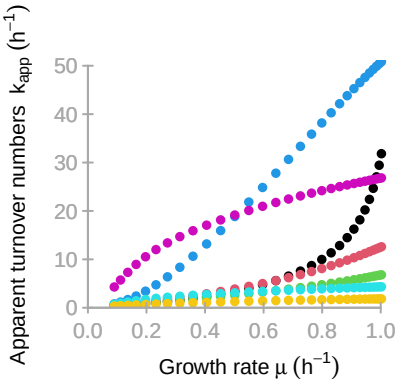

Relative biomass composition
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)
C
AA
NT
ATP
RNA
DNA
P


Absolute biomass composition
200
150
100
50
0
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)
C
AA
NT
ATP
RNA
DNA
P


Proteome fractions ϕ
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)


Flux fractions f
2.0
1.5
1.0
0.5
0.0
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)


Turnover times τ (h)
5
4
3
2
1
0
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)
TC
ATPS
EAA
ENT
RNAP
DNAP
R


Apparent turnover numbers kapp (h−1)
50
40
30
20
10
0
0.0
0.2
0.4
0.6
0.8
1.0
Growth rate μ (h−1)

M

	TC	ATPS	EAA	ENT	RNAP	DNAP	R
C	1	−1	−1	−0.45	0	0	0
AA	0	0	1	−0.45	0	0	−0.8
NT	0	0	0	1	−1	−1	0
ATP	0	0.5	0	−0.1	0	0	−0.2
RNA	0	0	0	0	1	0	0
DNA	0	0	0	0	0	1	0
P	0	0	0	0	0	0	1

K

	TC	ATPS	EAA	ENT	RNAP	DNAP	R
x_C	1	0	0	0	0	0	0
x_W	0	0	0	0	0	0	0
C	5	2	2	2	0	0	0
AA	0	0	5	2	0	0	2
NT	0	0	0	5	2	2	0
ATP	0	5	0	2	0	0	2
RNA	0	0	0	0	0	0	0
DNA	0	0	0	0	0	0	0
P	0	0	0	0	0	0	0

KA

	TC	ATPS	EAA	ENT	RNAP	DNAP	R
x_C	0	0	0	0	0	0	0
x_W	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0
AA	0	0	0	0	0	0	0
NT	0	0	0	0	0	0	0
ATP	0	0	0	0	0	0	0
RNA	0	0	0	0	0	0	72
DNA	0	0	0	0	11	11	0
P	0	0	0	0	0	0	0

kcat

	[,1]	[,2]	[,3]	[,4]	[,5]	[,6]	[,7]
kcatf	50.7	18.5	9.6	76.8	10.1	62.6	5.8
kcatb	10.1	3.7	1.9	15.4	0	0	0

Keq

	[,1]	[,2]	[,3]	[,4]	[,5]	[,6]	[,7]
[1,]	25.0990099009901	12.5	12.6315789473684	3.11688311688312	Inf	Inf	Inf