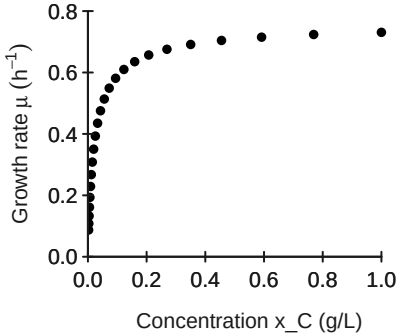
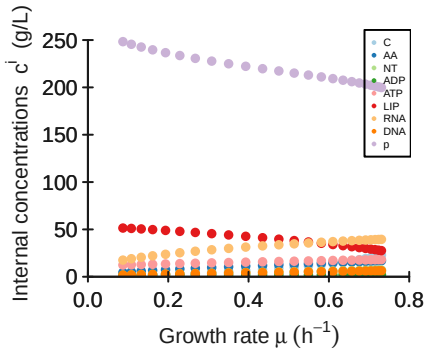
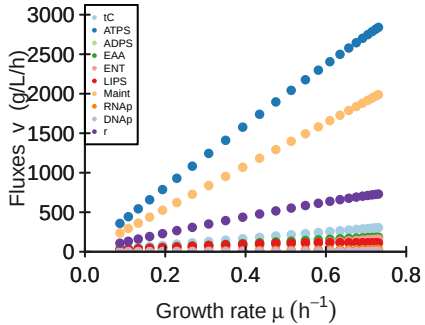
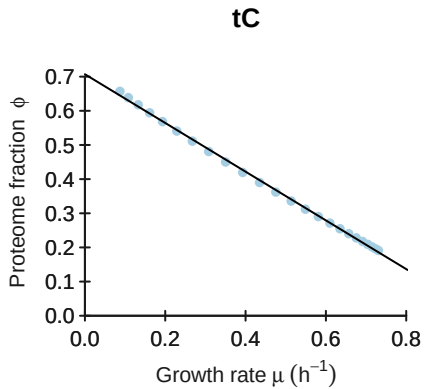
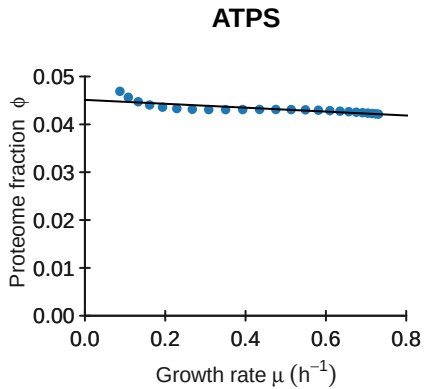
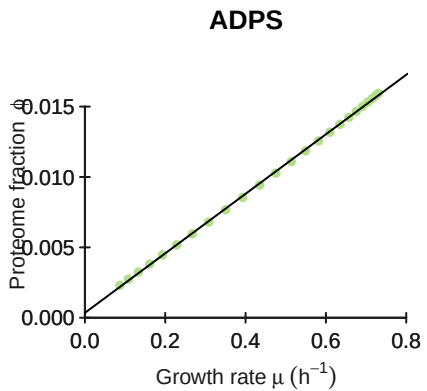

Growth rate μ (h$^{-1}$)
Concentration x_C (g/L)

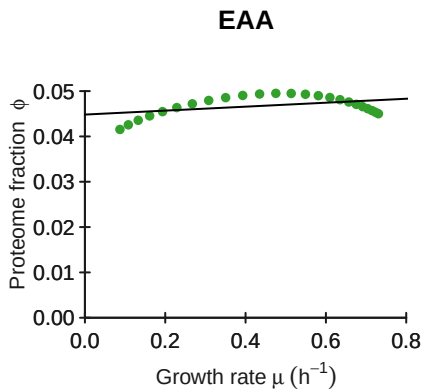

Internal concentrations $c^i$ (g/L)
Growth rate μ (h$^{-1}$)
C
AA
NT
ADP
ATP
LIP
RNA
DNA
p

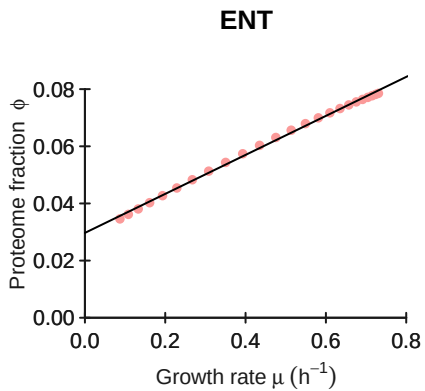

Fluxes v (g/L/h)
Growth rate μ (h$^{-1}$)
tC
ATPS
ADPS
EAA
ENT
LIPS
Maint
RNAp
DNAp
r

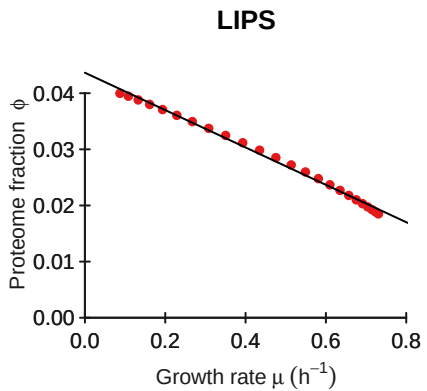

tC
Proteome fraction ϕ
Growth rate μ (h$^{-1}$)

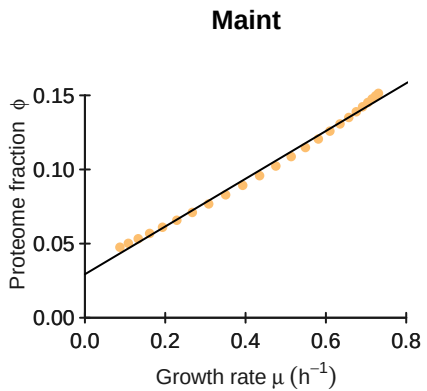

ATPS
Proteome fraction ϕ
Growth rate μ (h$^{-1}$)

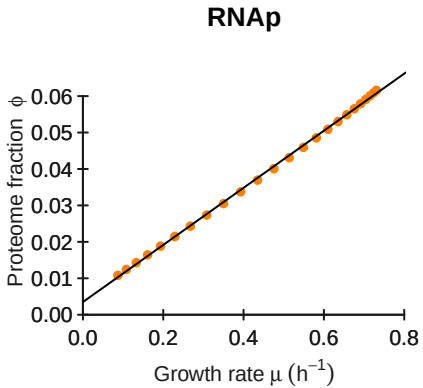

ADPS
Proteome fraction ϕ
Growth rate μ (h$^{-1}$)

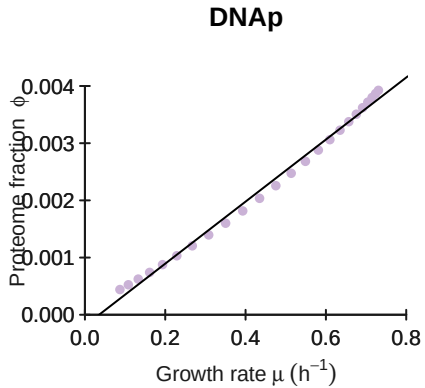

EAA
Proteome fraction ϕ
Growth rate μ (h$^{-1}$)

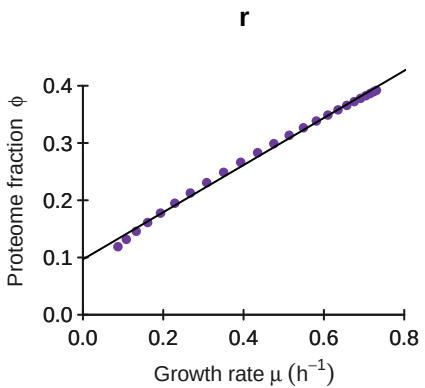

ENT
Proteome fraction ϕ
Growth rate μ (h$^{-1}$)

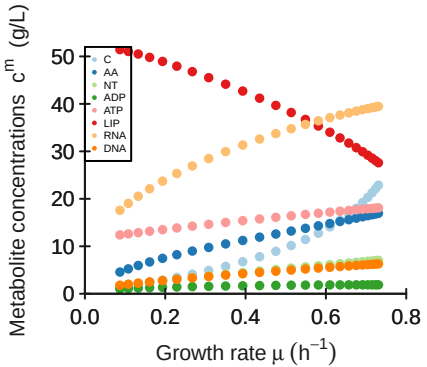

LIPS
Proteome fraction ϕ
Growth rate μ (h$^{-1}$)

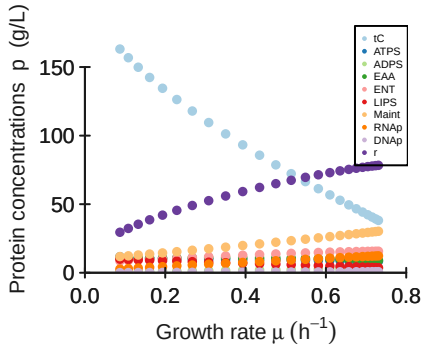

Maint
Proteome fraction ϕ
Growth rate μ (h$^{-1}$)

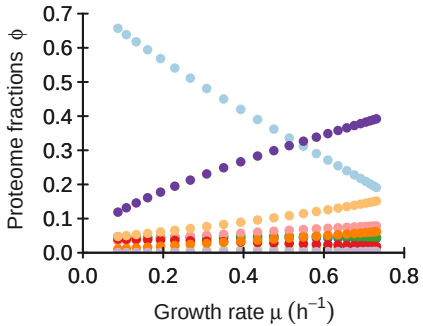

RNAp
Proteome fraction ϕ
Growth rate μ (h−1)

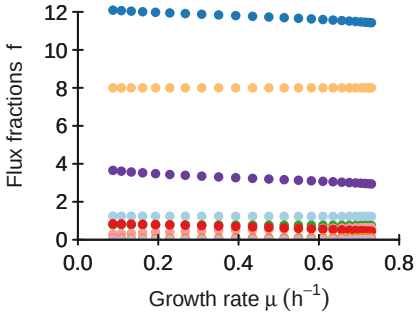

DNAp
Proteome fraction ϕ
Growth rate μ (h−1)

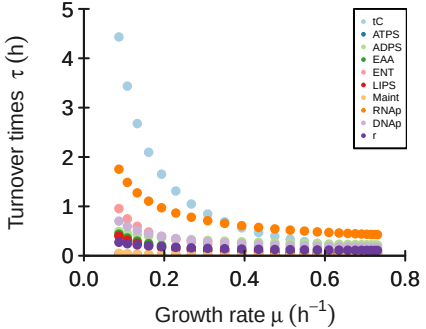

r
Proteome fraction ϕ
Growth rate μ (h−1)

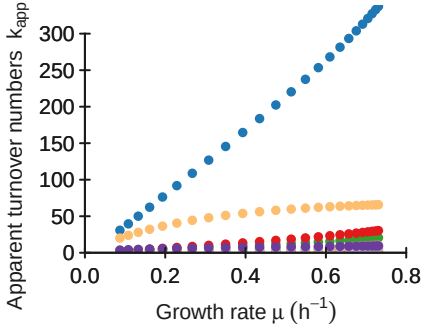

Metabolite concentrations cm (g/L)
C
AA
NT
ADP
ATP
LIP
RNA
DNA
Growth rate μ (h−1)

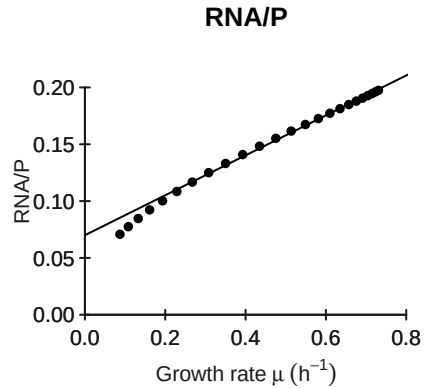

Protein concentrations p (g/L)
tC
ATPS
ADPS
EAA
ENT
LIPS
Maint
RNAp
DNAp
r
Growth rate μ (h−1)

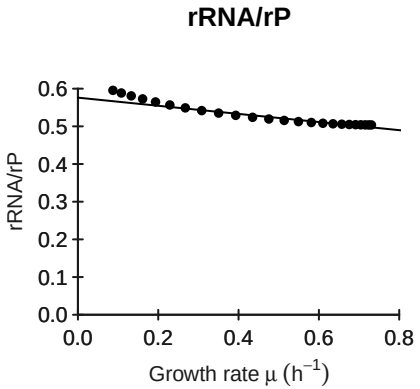

Proteome fractions ϕ
Growth rate μ (h−1)

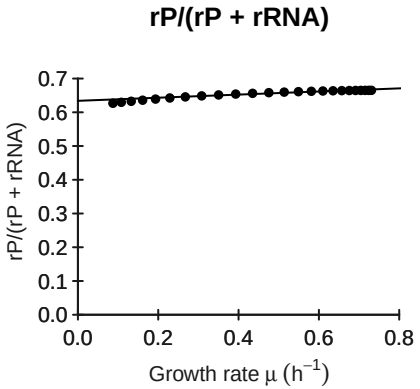

Flux fractions f
Growth rate μ (h−1)

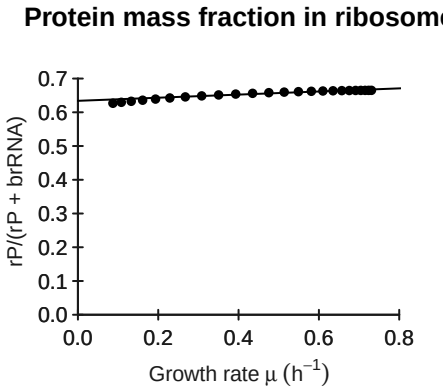

Turnover times τ (h)
tC
ATPS
ADPS
EAA
ENT
LIPS
Maint
RNAp
DNAp
r
Growth rate μ (h−1)

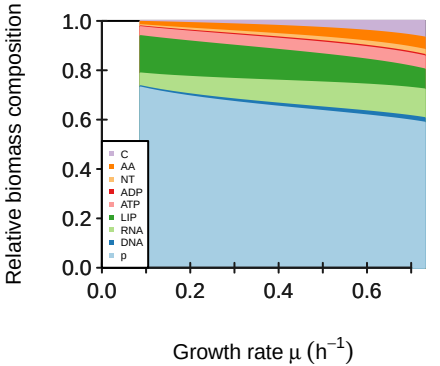

Apparent turnover numbers kapp (h−1)
Growth rate μ (h−1)

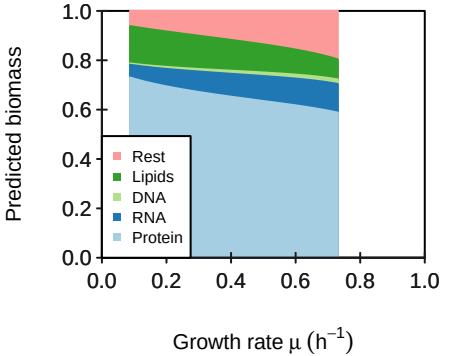

RNA/P
RNA/P
Growth rate μ (h−1)

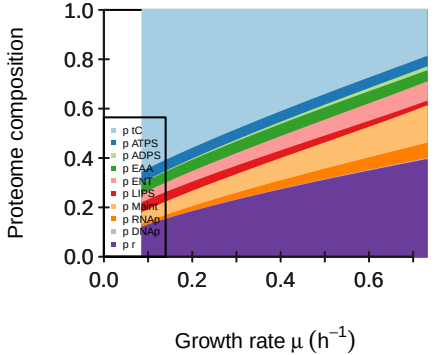

rRNA/rP
rRNA/rP
Growth rate μ (h−1)

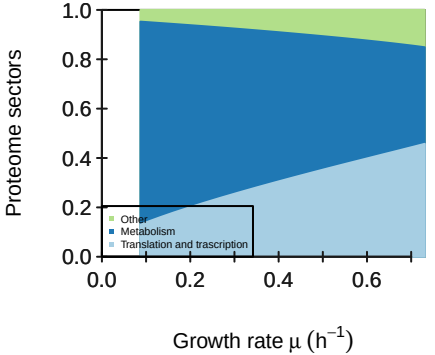

rP/(rP + rRNA)
rP/(rP + rRNA)
Growth rate μ (h−1)


Protein mass fraction in ribosome
rP/(rP + brRNA)
Growth rate μ (h−1)


Relative biomass composition
C
AA
NT
ADP
ATP
LIP
RNA
DNA
p
Growth rate μ (h−1)


Predicted biomass
Rest
Lipids
DNA
RNA
Protein
Growth rate μ (h−1)


Proteome composition
p tC
p ATPS
p ADPS
p EAA
p ENT
p LIPS
p Maint
p RNAp
p DNAp
p r
Growth rate μ (h−1)


Proteome sectors
Other
Metabolism
Translation and trascription
Growth rate μ (h−1)

# M

| | tC | ATPS | ADPS | EAA | ENT | LIPS | Maint | RNAp | DNAp | r |
|---|---|---|---|---|---|---|---|---|---|---|
| **C** | 1 | −0.02 | 0 | −1 | −0.167 | −0.18 | 0 | 0 | 0 | 0 |
| **AA** | 0 | 0 | 0 | 1 | −0.167 | 0 | 0 | 0 | 0 | −0.2 |
| **NT** | 0 | 0 | −1 | 0 | 0.334 | 0 | 0 | −1 | −1 | 0 |
| **ADP** | 0 | −0.98 | 1 | 0 | 0.666 | 0.82 | 1 | 0 | 0 | 0.8 |
| **ATP** | 0 | 0.98 | 0 | 0 | −0.666 | −0.82 | −1 | 0 | 0 | −0.8 |
| **LIP** | 0 | 0 | 0 | 0 | 0 | 0.18 | 0 | 0 | 0 | 0 |
| **RNA** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| **DNA** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| **p** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 |

# K

| | tC | ATPS | ADPS | EAA | ENT | LIPS | Maint | RNAp | DNAp | r |
|---|---|---|---|---|---|---|---|---|---|---|
| **x_C** | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **x_W** | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **C** | 26 | 9 | 0 | 9 | 9 | 9 | 0 | 0 | 0 | 0 |
| **AA** | 0 | 0 | 0 | 7 | 3 | 0 | 0 | 0 | 0 | 3 |
| **NT** | 0 | 0 | 3 | 0 | 7 | 0 | 0 | 3 | 3 | 0 |
| **ADP** | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| **ATP** | 0 | 7 | 0 | 0 | 3 | 3 | 3 | 0 | 0 | 3 |
| **LIP** | 0 | 0 | 0 | 0 | 0 | 35 | 0 | 0 | 0 | 0 |
| **RNA** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **DNA** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **p** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# KA

| | tC | ATPS | ADPS | EAA | ENT | LIPS | Maint | RNAp | DNAp | r |
|---|---|---|---|---|---|---|---|---|---|---|
| **x_C** | 0 | 0 | 0 | 0 | 0 | 0 | 0.005 | 0 | 0 | 0 |
| **x_W** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **C** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **AA** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **NT** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ADP** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **ATP** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **LIP** | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **RNA** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 |
| **DNA** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 |
| **p** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# kcat

| | tC | ATPS | ADPS | EAA | ENT | LIPS | Maint | RNAp | DNAp | r |
|---|---|---|---|---|---|---|---|---|---|---|
| **kcatf** | 20 | 903 | 11 | 53 | 20 | 58 | 77 | 6 | 15 | 29 |
| **kcatb** | 2 | 90 | 1 | 5 | 2 | 6 | 0 | 0 | 0 | 0 |

## Keq

| | [,1] | [,2] | [,3] | [,4] | [,5] | [,6] | [,7] | [,8] | [,9] | [,10] |
|---|---|---|---|---|---|---|---|---|---|---|
| **[1,]** | 2600 | 156.074074074074 | 3.66666666666667 | 8.24444444444444 | 0.864197530864197 | 12.5308641975309 | Inf | Inf | Inf | Inf |

## phi input

| | [,1] | [,2] | [,3] | [,4] | [,5] | [,6] | [,7] | [,8] | [,9] | [,10] |
|---|---|---|---|---|---|---|---|---|---|---|
| **[1,]** | 0.11 | 0.023 | 0.005 | 0.032 | 0.16 | 0.031 | 0.2506 | 0.0794 | 0.002 | 0.307 |

**average saturation input**

3

**minimal phi constraint**

| | [,1] | [,2] | [,3] | [,4] | [,5] | [,6] | [,7] | [,8] | [,9] | [,10] |
|---|---|---|---|---|---|---|---|---|---|---|
| [1,] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## minimal f constraint

| | [,1] | [,2] | [,3] | [,4] | [,5] | [,6] | [,7] | [,8] | [,9] | [,10] |
|---|---|---|---|---|---|---|---|---|---|---|
| [1,] | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 |