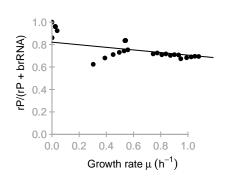
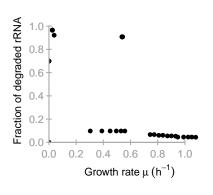
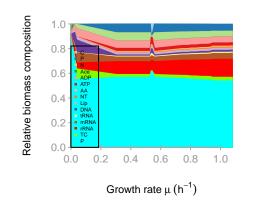
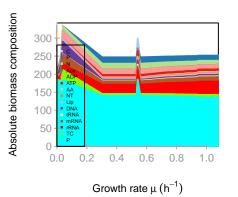


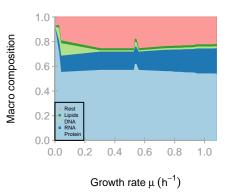
Protein mass fraction in ribosome

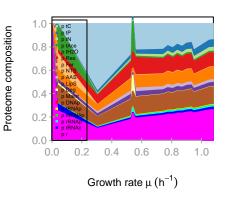


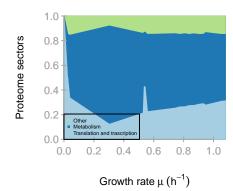












| | tC | tP | tN | tAce | tH2O | Res | Fer | NTS | AAS | LipS | Deg | Maint | DNAp | tRNAp | mRNAp | rRNAp | tRNAc | r |
|------|----|----|----|------|------|--------|-------|--------|-------|--------|------|-------|------|-------|-------|-------|--------|--------|
| С | 1 | 0 | 0 | 0 | 0 | -0.002 | -0.02 | -0.175 | -0.76 | -0.112 | ŏ | 0 | Ō | Ö | Ö | Ō | 0 | 0 |
| P | 0 | 1 | 0 | 0 | 0 | -0.124 | -0.12 | 0.046 | 0 | 0.102 | 0 | 0 | 0 | 0 | 0 | 0 | 0.002 | 0.008 |
| N | 0 | 0 | 1 | 0 | 0 | 0 | 0 | -0.079 | -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 | -0.054 | 0 | -0.064 | 0 | 0 | 0 | 0 | 0 | 0 | -0.001 | -0.004 |
| ADP | 0 | 0 | 0 | 0 | 0 | -0.874 | 0.91 | 0.657 | 0 | 0.774 | 0 | 1 | 0 | 0 | 0 | 0 | 0.013 | 0.053 |
| ATP | 0 | 0 | 0 | 0 | 0 | 0.926 | -0.86 | -0.692 | 0 | -0.82 | 0 | -1 | 0 | 0 | 0 | 0 | -0.014 | -0.057 |
| AA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.005 | 0 |
| NT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.297 | 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 | -0.98 | 0.934 |
| 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 | 0.985 | -0.939 |
| P | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.005 |

| | tC | tΡ | 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 | 0 | 0 | 0 | 0 | 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 |
| С | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| P | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 10 | 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 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ace H2O | 0 | 0 | 0 | 0 | 0 | 800 | 800 | 800 | 0 | 750 | 0 | 0 | 0 | 0 | 0 | 0 | 800 | 800 |
| ADP | 0 | 0 | 0 | 0 | 0 | 10 | 10 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ATP | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| AA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| NT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |
| Lip | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 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 | 0 | 0 | 0 | 2 | 0 |
| mRNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| rRNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| P | 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

| kcatf | [,1] | [,2] | [, 3] | [,4] | [,5] | [,6] | [,7] | [,8] | [,9] | [, 10] | [,11] | [, 12] | [, 13] | [,14] | [, 15] | [,16] | [,17] | [,18] |
|-------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|--------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|
| | 200 | 40 | 40 | 40 | 40000 | 1000 | 1500 | 100 | 100 | 40 | 10 | 10 | 200 | 136 | 96 | 136 | 60000 | 6000 |
| kcatb | 20 | 4 | 4 | 2 | 4000 | 100 | 150 | 10 | 10 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Keq

| [1,] | [,1] 10 | [,2] 10 | [, 3] 10 | [, 4] 200 | [,5] 10 | [,6] 800 | [,7] 80000 | [,8] 1.25 | [,9] 100 | [,10] 4 | [,11] Inf | [,12] Inf | [,13] Inf | [,14] Inf | [,15] Inf | [,16] Inf | [,17] Inf | [,18] Inf |
|------|--------------------|--------------------|---------------------|----------------------|-------------------|--------------------|-----------------------|---------------------|--------------------|------------|--------------|--------------|--------------|--------------|----------------------|----------------------|----------------------|---------------------|

| minimal phi constraint | ni constraint |
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[1,]