







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   | 0    | 0    | 0 |
| $x_W$ | 0   | 0    | 0    | 0    | 0   | 0   | 0    | 0    | 0 |
| С     | 0   | 0.4  | 4    | 0    | 0   | 0   | 0    | 0    | 0 |
| I     | 0   | 0    | 0    | 0    | 2   | 2   | 0    | 0    | 0 |
| AA    | 0   | 0    | 0    | 0    | 0   | 2   | 0    | 0    | 2 |
| NT    | 0   | 0    | 0    | 2    | 0   | 0   | 2    | 2    | 0 |
| ADP   | 0   | 0.1  | 1    | 0    | 0   | 0   | 0    | 0    | 0 |
| ATP   | 0   | 0    | 0    | 0    | 0   | 2   | 0    | 0    | 2 |
| 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 |
|       |     |      |      |      |     |     |      |      |   |

KA

|       | 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 | 56 | 254  | 169.333333333333 | 24   | 7   | 123 | 6    | 12   | 17 |
| kcatb | 0  | 0    | 0                | 0    | 0   | 0   | 0    | 0    | 0  |

#### 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    |