





maintenance\_fun constant

keep\_ribosome\_kcat FALSE keep\_transport\_kcat FALSE

|      | tC | FERM | RESP  | ADPS | EAA | ENT   | LIPS  | Maint | RNAp | DNAp | r    |
|------|----|------|-------|------|-----|-------|-------|-------|------|------|------|
| С    | 1  | -0.2 | -0.15 | 0    | 0   | 0     | 0     | 0     | Ō    | Ō    | 0    |
| - 1  | 0  | 0.1  | 0.1   | 0    | -1  | -0.17 | -0.18 | 0     | 0    | 0    | 0    |
| AA   | 0  | 0    | 0     | 0    | 1   | -0.17 | 0     | 0     | 0    | 0    | -0.2 |
| NT   | 0  | 0    | 0     | -1   | 0   | 0.34  | 0     | 0     | -1   | -1   | 0    |
| ADP  | 0  | -0.8 | -0.85 | 1    | 0   | 0.66  | 0.82  | 1     | 0    | 0    | 0.8  |
| ATP  | 0  | 0.8  | 0.85  | 0    | 0   | -0.66 | -0.82 | -1    | 0    | 0    | -0.8 |
| LIP  | 0  | 0    | 0     | 0    | 0   | 0     | 0.18  | 0     | 0    | 0    | 0    |
| rRNA | 0  | 0    | 0     | 0    | 0   | 0     | 0     | 0     | 1    | 0    | 0    |
| DNA  | 0  | 0    | 0     | 0    | 0   | 0     | 0     | 0     | 0    | 1    | 0    |
| р    | 0  | 0    | 0     | 0    | 0   | 0     | 0     | 0     | 0    | 0    | 0.2  |

|      | tC  | FERM | RESP | ADPS | EAA | ENT | LIPS | Maint | RNAp | DNAp | r |
|------|-----|------|------|------|-----|-----|------|-------|------|------|---|
| x_C  | 0.1 | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0 |
| x_W  | 0   | 20   | 4    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0 |
| С    | 0   | 12   | 2.4  | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0 |
| I    | 0   | 0    | 0    | 0    | 2   | 2   | 2    | 0     | 0    | 0    | 0 |
| AA   | 0   | 0    | 0    | 0    | 0   | 2   | 0    | 0     | 0    | 0    | 2 |
| NT   | 0   | 0    | 0    | 2    | 0   | 0   | 0    | 0     | 2    | 2    | 0 |
| ADP  | 0   | 1    | 0.2  | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0 |
| ATP  | 0   | 0    | 0    | 0    | 0   | 2   | 2    | 2     | 0    | 0    | 2 |
| LIP  | 0   | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0 |
| rRNA | 0   | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0 |
| DNA  | 0   | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0 |
| р    | 0   | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0 |

|      | tC | FERM | RESP | ADPS | EAA | ENT | LIPS | Maint | RNAp | DNAp | r  |
|------|----|------|------|------|-----|-----|------|-------|------|------|----|
| x_C  | 0  | 0    | 0    | 0    | 0   | 0   | 0    | 0.02  | Ō    | Ō    | 0  |
| x_W  | 0  | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0  |
| С    | 0  | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0  |
| I    | 0  | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0  |
| AA   | 0  | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0  |
| NT   | 0  | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0  |
| ADP  | 0  | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0  |
| ATP  | 0  | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0  |
| LIP  | 0  | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0  |
| rRNA | 0  | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 40 |
| DNA  | 0  | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 4    | 4    | 0  |
| р    | 0  | 0    | 0    | 0    | 0   | 0   | 0    | 0     | 0    | 0    | 0  |

### kcat

|       | tC   | FERM   | KESP  | ADPS | EAA | ENI   | LIPS | waint | KNAP | DNAP | r  |
|-------|------|--------|-------|------|-----|-------|------|-------|------|------|----|
| kcatf | 67.2 | 1174.1 | 234.9 | 14.4 | 11  | 154.3 | 63.9 | 39.7  | 6.6  | 16.6 | 32 |
| kcatb | 0    | 0      | 0     | 0    | 0   | 0     | 0    | 0     | 0    | 0    | 0  |

# Keq



## phi input



## average saturation input

## minimal phi constraint

| .1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10] | 1 <b>]</b> | <b>[,2]</b> | <b>[,3]</b> | <b>[,4]</b> | <b>[,5]</b> | <b>[,6]</b> | <b>[,7]</b> | <b>[,8]</b> | <b>[,9]</b> | <b>[,10]</b> | <b>[,11]</b> |
|---|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| 0 0 0 0 0 0 0.031 0 0                             | 0          | 0           | 0           | 0           | 0           | 0           | 0.031       | 0           | 0           | O            | 0            |

[1,]

### minimal f constraint

|      | [.1] | ſ <b>.2</b> 1 | [,3] | [.4] | [,5] | <b>[.61</b> | [,7] | [,8]             | [,9] | [.10] | [,11] |
|------|------|---------------|------|------|------|-------------|------|------------------|------|-------|-------|
| [1,] | 0    |               |      |      |      |             |      | 4.55437091503269 |      |       |       |