







| | tC | tW | ATPS | ADPS | EAA | ENT | LIPS | Maint | rRNAp | mRNAp | tRNAp | rRNase | mRNase | tRNAse | DNAp | tRNAc | r |
|------|----|----|------|------|-----|--------|-------|-------|-------|-------|-------|--------|--------|--------|------|-------|-------|
| С | 1 | 0 | -0.2 | 0 | -1 | -0.167 | -0.18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Ō | 0 | 0 |
| AA | 0 | 0 | 0 | 0 | 1 | -0.167 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.01 | 0 |
| NT | 0 | 0 | 0 | -1 | 0 | 0.334 | 0 | 0 | -1 | -1 | -1 | 1 | 1 | 1 | -1 | 0 | 0 |
| ADP | 0 | 0 | -0.8 | 1 | 0 | 0.666 | 0.82 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0.05 |
| ATP | 0 | 0 | 0.8 | 0 | 0 | -0.666 | -0.82 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.05 | -0.05 |
| W | 0 | -1 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LIP | 0 | 0 | 0 | 0 | 0 | 0 | 0.18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| rRNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 |
| mRNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | -1 | 0 | 0 | 0 | 0 |
| tRNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | -1 | 0 | -0.94 | 0.94 |
| DNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| TC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.95 | -0.95 |
| р | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.01 |

| | tC | tW | ATPS | ADPS | EAA | ENT | LIPS | Maint | rRNAp | mRNAp | tRNAp | rRNase | mRNase | tRNAse | DNAp | tRNAc | r |
|-----------|-----|----|------|------|-----|-----|------|-------|-------|-------|-------|--------|--------|--------|------|-------|---|
| x_C | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Ö | Ö | Ö | 0 | 0 | 0 | Ö | 0 | 0 |
| x_W | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| С | 5 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AA | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| NT | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| ADP | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ATP | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| W | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LIP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| rRNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 |
| mRNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| tRNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| DNA TC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TC | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| р | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | tC | tW | ATPS | ADPS | EAA | ENT | LIPS | Maint | rRNAp | mRNAp | tRNAp | rRNase | mRNase | tRNAse | DNAp | tRNAc | r |
|-------------|----|----|------|------|-----|-----|------|-------|-------|-------|-------|--------|--------|--------|------|-------|----|
| x_C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | Ö | Ö | Ö | 0 | 0 | 0 | Ö | 0 | 0 |
| x_W | 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 |
| AA | 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 |
| ADP | 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 |
| W | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LIP | 50 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| rRNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 70 |
| mRNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| tRNA DNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 5 | 0 | 0 | 0 | 5 | 0 | 0 |
| TC | 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 |

kcat

| | [,1] | [,2] | [,3] | [,4] | [,5] | [,6] | [,7] | [.8] | [.9] | [,10] | [,11] | [,12] | [,13] | [,14] | [,15] | [,16] | [,17] |
|-------|------|------|------|------|------|------|------|------|------|-------|-------|--------------------|-------|-------|-------|-------|-------|
| kcatf | 100 | 120 | 968 | 4 | 9 | 160 | 53 | 3 | 4 | - ī | 1 | [,12] 10 | 10 | 10 | 42 | 10306 | 626 |
| kcatb | 10 | 12 | 97 | 1 | 1 | 16 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Keq

| [1,] | [,1] 100 | [,2] 5 | [,3] 9.97938144329897 | [,4] 8 | [,5] 9 | [,6] 10 | [,7] 10.6 | [,8] Inf | [,9] Inf | [,10] Inf | [,11] Inf | [,12] Inf | [,13] Inf | [,14] Inf | [,15] Inf | [,16] Inf | [,17] Inf |
|------|-------------|-------------------|---------------------------------|--------------------|-------------------|-------------------|---------------------|---------------------|--------------------|---------------------|---------------------|--------------|--------------|---------------------|---------------------|---------------------|--------------|

minimal f constraint

[,1] [,2] [,3] [,4] [,5] [,6] [,7] 0 0 0 0 0 0

[,8] [,9] [,10] [,11] [,12] [,13] [,14] [,15] [,16] [,17] 0.35 0 0 0 0 0 0 0 0