







| | tC | tW | GLY | RES | FER | ADPS | EAA | ENT | LIPS | Maint | rRNAp | mRNAp | tRNAp | rRNase | mRNase | tRNAse | DNAp | tRNAc | r |
|------|----|----|------|-------|-----|------|------|--------|-------|-------|-------|-------|-------|--------|--------|--------|------|-------|-------|
| С | 1 | 0 | -0.2 | 0 | 0 | 0 | -0.5 | -0.167 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AA | 0 | 0 | 0 | 0 | 0 | 0 | 1 | -0.167 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.01 | 0 |
| NT | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0.334 | 0 | 0 | -1 | -1 | -1 | 1 | 1 | 1 | -1 | 0 | 0 |
| ADP | 0 | 0 | -0.8 | -0.98 | 0 | 1 | 0 | 0.666 | 0.82 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.05 | 0.05 |
| ATP | 0 | 0 | 0.8 | 0.98 | 0 | 0 | 0 | -0.666 | -0.82 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -0.05 | -0.05 |
| CI | 0 | 0 | 0.2 | -0.02 | -1 | 0 | -0.5 | 0 | -0.18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W | 0 | -1 | 0 | 0.02 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LIP | 0 | 0 | 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 | 0 | 0 | 1 | 0 | 0 | -1 | 0 | 0 | 0 | 0 | 0 |
| mRNA | 0 | 0 | 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 | 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 | 0 | 0 | 1 | 0 | 0 |
| TC | 0 | 0 | 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 | 0 | 0.01 |

| | tC | tW | GLY | RES | FER | 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 | 0 | 0 | Ö | Ö | Ö | 0 | 0 | 0 | Ö | 0 | 0 |
| x_C x_W | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| С | 4 | 0 | 2 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| AA | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| NT | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 4 | 0 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| ADP | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ATP | 0 | 0 | 7 | 7 | 0 | 0 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 |
| CI | 0 | 0 | 31 | 2 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| W | 0 | 11 | 0 | 31 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LIP | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| rRNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 |
| mRNA | 0 | 0 | 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 | 0 | 0 | 1 | 0 | 1 | 0 |
| DNA | 0 | 0 | 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 | 0 | 0 | 3 | 1 |
| р | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | tC | tW | GLY | RES | FER | ADPS | EAA | ENT | LIPS | Maint | rRNAp | mRNAp | tRNAp | rRNase | mRNase | tRNAse | DNAp | tRNAc | r |
|-----------|----|----|-----|-----|-----|------|-----|-----|------|-------|-------|-------|-------|--------|--------|--------|------|-------|----|
| x_C | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Ō | Ö | Ō | 0 | 0 | 0 | Ō | 0 | 0 |
| x_W | 0 | 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 | 0 |
| AA | 0 | 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 | 0 |
| ADP | 0 | 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 | 0 |
| CI | 0 | 0 | 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 | 0 | 0 |
| LIP | 35 | 35 | 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 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 |
| mRNA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| tRNA | 0 | 0 | 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 | 0 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| DNA TC | 0 | 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 | 0 |

kcat

| kcatf | [,1] | [,2] | [,3] | [,4] | [,5] | [, 6] | [,7] | [,8] | [,9] | [,10] | [,11] | [,12] | [,13] | [,14] | [,15] | [,16] | [,17] | [,18] | [,19] |
|-------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|---------------|--------------|--------------|
| | 150 | 200 | 300 | 30 | 300 | 7 | 14 | 61 | 40 | 10 | 40 | 30 | 40 | 40 | 200 | 40 | 200 | 12000 | 600 |
| kcatb | 15 | 20 | 30 | 3 | 30 | 1 | 1 | 6 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Keq

| [1,] | [,1] | [,2] | [,3] | [,4] | [,5] | [,6] | [,7] | [,8] | [,9] | [,10] | [,11] | [, 12] | [,13] | [, 14] | [, 15] | [, 16] | [, 17] | [, 18] | [,19] |
|------|--------------|-------------------|-------------|-------------|-------------|-------------|--------------|------------------|-------------|---------------|-------|---------------|-------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 80 | 0.909090909090909 | 542.5 | 542.5 | 155 | 3.5 | 7 | 50.8333333333333 | 160 | Inf | Inf | Inf | Inf | Inf | Inf | Inf | Inf | Inf | Inf |

[,11] [,12] [,13] 0 0 0

[,14] 0.001

[,15] [,16] [,17] [,18] [,19] 0.001 0.001 0 0 0

| minimal phi | constraint |
|-------------|------------|
|-------------|------------|

[,10] 0.122

[,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] (0.5)

[1,]