







	tC	tP	tN	tAce	tH2O	Res	Fer	NTS	AAS	LipS	Deg	DNAp	tRNAp	mRNAp	rRNAp	tRNAc	r
С	1	0	0	0	0	-0.01	-0.15	-0.26	-0.25	-1	ŏ	Ö	Ö	Ö	Ö	0	0
Р	0	1	0	0	0	-0.16	-0.13	0.1	0.1	0	0	0	0	0	0	0	0
N	0	0	1	0	0	0	0	0	-0.04	0	0	0	0	0	0	0	0
w	0	0	0	-1	0	0.01	0.15	0	0	0	0	0	0	0	0	0	0
H2O	0	0	0	0	1	0.01	0	0	0	0	0	0	0	0	0	0	0
ADP	0	0	0	0	0	-0.83	-0.71	0.51	0.6	0	0	0	0	0	0	0.1	0.1
ATP	0	0	0	0	0	0.98	0.84	-0.61	-0.71	0	0	0	0	0	0	-0.1	-0.1
AA	0	0	0	0	0	0	0	-0.13	0.3	0	0	0	0	0	0	-0.2	0
NT	0	0	0	0	0	0	0	0.39	0	0	1	-1	-1	-1	-1	0	0
Lip	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
DNA	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	1	0	0	-0.7	0.1
mRNA	0	0	0	0	0	0	0	0	0	0	-0.1	0	0	1	0	0	0
rRNA	0	0	0	0	0	0	0	0	0	0	-0.8	0	0	0	1	0	0
TC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9	-0.9
Р	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8

	tC	tΡ	tN	tAce	tH2O	Res	Fer	NTS	AAS	LipS	Deg	DNAp	tRNAp	mRNAp	rRNAp	tRNAc	r
x_C	1	0	0	0	0	0	0	0	0	0	ō	Ö	Ō	Ö	Ö	0	0
x_P	0	1	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
x_Ace	0	0	0	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
_ C	0	0	0	0	0	10	8	5	4	5	0	0	0	0	0	0	0
Р	0	0	0	0	0	5	3	2	3	4	0	0	0	0	0	0	0
N	0	0	0	0	0	5	3	1	2	3	0	0	0	0	0	0	0
W	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
H2O ADP	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
ADP	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0
ATP	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	4	5
AA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0
NT	0	0	0	0	0	0	0	0	0	0	0	5	3	1	2	0	0
Lip	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	0	0	0	0	0	0	0
tRNA	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5	0
mRNA	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
rRNA	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
TC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
P	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	DNAp	RNAp	mRNAp	rRNAp	tRNAc	r
x_C	0	0	0	0	0	0	0	0	0	. 0	ō	Ö	Ö	Ō	Ō	0	0
x_C x_P	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
x_Ace	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
С	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
N	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
H2O	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
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
Lip 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	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
mRNA	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	50
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

catf catb	[,1] 20 2	[,2] 30 3	[,3] 40 4	[,4] 50 5	[,5] 1000 1	[,6] 1 1	[,7] 15 1	[,8] 10 1	[,9] 15 1	[, 10] 40 4	[,11] 50 0	[,12] 20 0	[,13] 30 0	[,14] 25 0	[,15] 35 0	[,16] 20 0	[,17] 4.55 0

Keq

[1,]	[,1] 10	[,2] 10	[,3] 10	[,4] 10	[,5] 100	[,6] 0.004	[,7] 0.125	[, 8]	[,9] 2.8125	[,10] 2	[,11] Inf	[,12] Inf	[,13] Inf	[, 14] Inf	[, 15] Inf	[,16] Inf	[, 17] Inf

minimal phi constraint

[,**12]** 0

[,11] 0.003 [,13] [,14] [,15] [,16] 0 0 0 0

[,17] 0

[,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10] 0 0 0 0 0 0 0 0

[,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10] [,11] [,12] [,13] [,14] [,15] [,16] [,17] 0 0 0 0 0.7 0 0 0 0 0.05 0 0 0 0 0 0 0 0

[1,]