Table S3. Model Parameters.

№	Name	Value	Units	Description	Reference
1	ACEex_initial	0.0	mM	Initial external acetate concentration	[2]
2	ADP	0.56	mM	Adenosine-5-diphosphate concentration	[1]
3	AMP	0.28	mM	Adenosine-5-monophosphate concentration	[1]
4	ATP	9.6	mM	Adenosine-5-triphosphate concentration	[1]
5	C_A	30.0	gA/CmolA	Carbon molar weight of acetate	[2]
6	C_S	30.0	gS/CmolS	Carbon molar weight of substrate	[2]
7	C_X	24.6	gX/CmolX	Carbon molar weight of biomass	[2]
8	CoA	1.4	mM	Coenzyme A concentration	[1]
9	Cratotal	3.0E-4	mM	Cra total concentration	[1]
10	Crptotal	0.0115	mM	Crp total concentration	[1]
11	D	0.936	m	Impeller diameter	[2]
12	D_r	0.0	1/h	Dilution rate	[1]
13	EIIAtotal	0.0769	mM	EIIA total concentration	[1]
14	F_g	0.4	kg/s	0.4 or 0.79 ⁞ Gas inflow	[2]
15	FactoraceB	0.309	1	Fraction of enzyme	[1]
16	FactoraceK	0.0172	1	Relation of aceK to aceA	[1]
17	GLCex_initial	0.277778	mM	Initial external glucose concentration	[2]
18	H	10.464	m	Filling height of the reactor	[2]
19	IclRtotal	8.3E-5	mM	IclR total concentration	[1]
20	K6Pgdh6PG	0.101	mM	MM constant for 6PG in the reaction catalyzed by 6Pgdh	[1]
21	K6PgdhATPinh	3.01	mM	Inhibition constant for ATP in the reaction catalyzed by 6Pgdh	[1]
22	K6PgdhNADP	0.0208	mM	MM constant for NADP in the reaction catalyzed by 6Pgdh	[1]
23	K6PgdhNADPHinh	0.0421	mM	Inhibition constant for NADPH in the reaction catalyzed by 6Pgdh	[1]
24	KAceKIcdh	0.197	mM	MM constant for Icdh in the reaction catalyzed by AceK	[1]
25	KAceKIcdhP	7.26	mM	MM constant for IcdhP in the reaction catalyzed by AceK	[1]
26	KAceKOAA	0.01	mM	MM constant for OAA in the reaction catalyzed by AceK	[1]
27	KAceKphOAA	0.01	mM	MM constant for OAA in the reaction	[1]

				catalyzed by AceK	
28	KAckACEm	6.1	mM	MM constant for ACE in the reaction catalyzed by Ack	[1]
29	KAckADPm	0.177	mM	MM constant for ADP in the reaction catalyzed by Ack	[1]
30	KAckATPm	0.0886	mM	MM constant for ATP in the reaction catalyzed by Ack	[1]
31	KAckAcPm	0.0463	mM	MM constant for AcP in the reaction catalyzed by Ack	[1]
32	KAckeq	234.0	mM	Equilibrium constant for the reaction catalyzed by Ack	[1]
33	KAcsACE	0.024	mM	MM constant for ACE in the reaction of Acs expression	[1]
34	KCraFBP	0.0294	mM	MM constant for FBP in the reaction catalyzed by Cra	[1]
35	KCrpcAMP	0.42	mM	MM constant for cAMP in the reaction catalyzed by Crp	[1]
36	KCsAcCoA	0.0298	mM	MM constant for AcCoA in the reaction catalyzed by Cs	[1]
37	KCsOAA	0.00176	mM	MM constant for OAA in the reaction catalyzed by Cs	[1]
38	KCsOAAAcCoA	8.86E-5	mM	Combined MM constant for OAA and AcCoA in the reaction catalyzed by Ms	[1]
39	KCsaKG	0.187	mM	MM constant for aKG in the reaction catalyzed by Cs	[1]
40	KCyaEIIAP	0.00208	mM	MM constant for EIIAP in the reaction catalyzed by Cya	[1]
41	KEdaGAPm	1.18	mM	MM constant for GAP in the reaction catalyzed by Eda	[1]
42	KEdaKDPGm	0.15	mM	MM constant for KDPG in the reaction catalyzed by Eda	[1]
43	KEdaPYRm	7.7	mM	MM constant for PYR in the reaction catalyzed by Eda	[1]
44	KEdaeq	0.502	mM	Equilibrium constant for the reaction catalyzed by Eda	[1]
45	KEdd6PGm	0.118	mM	MM constant for 6PG in the reaction catalyzed by Edd	[1]
46	KEddKDPGm	2.02	mM	MM constant for KDPG in the reaction catalyzed by Edd	[1]
47	KEddeq	1000.0	mM	Equilibrium constant for the reaction	[1]

				catalyzed by Edd	
48	KFbaDHAP	0.088	mM	MM constant for DHAP in the reaction catalyzed by Fba	[1]
49	KFbaFBP	0.0839	mM	MM constant for FBP in the reaction catalyzed by Fba	[1]
50	KFbaGAP	0.154	mM	MM constant for GAP in the reaction catalyzed by Fba	[1]
51	KFbaGAPinh	0.6	mM	Inhibition constant for GAP in the reaction catalyzed by Fba	[1]
52	KFbaeq	0.372	mM	Equilibrium constant for the reaction catalyzed by Fba	[1]
53	KFbpFBP	0.00892	mM	MM constant for FBP in the reaction of Fbp expression	[1]
54	KFbpPEP	0.488	mM	MM constant for PEP in the reaction of Fbp expression	[1]
55	KFumFUMm	0.0965	mM	MM constant for FUM in the reaction catalyzed by Fum	[1]
56	KFumeq	12.9	mM	Equilibrium constant for the reaction catalyzed by Fum	[1]
57	KG6pdhG6P	0.356	mM	MM constant for G6P in the reaction catalyzed by G6pdh	[1]
58	KG6pdhNADP	0.00382	mM	MM constant for NADP in the reaction catalyzed by G6pdh	[1]
59	KG6pdhNADPHg6pinh	0.193	mM	Inhibition constant for NADPH and related to G6P in the reaction catalyzed by G6pdh	[1]
60	KG6pdhNADPHnadpinh	0.0815	mM	Inhibition constant for NADPH and related to NADP in the reaction catalyzed by G6pdh	[1]
61	KGapdhGAP	0.152	mM	MM constant for GAP in the reaction catalyzed by Gapdh	[1]
62	KGapdhNAD	0.45	mM	MM constant for NAD in the reaction catalyzed by Gapdh	[1]
63	KGapdhNADH	0.0208	mM	MM constant for NADH in the reaction catalyzed by Gapdh	[1]
64	KGapdhPGP	0.134	mM	MM constant for PGP in the reaction catalyzed by Gapdh	[1]
65	KGapdheq	0.3	mM	Equilibrium constant for the reaction catalyzed by Gapdh	[1]
66	KGlkATPm	0.712	mM	MM constant for ATP in the reaction catalyzed by Glk	[1]

67	KGlkG6Pi	15.0	mM	Inhibition constant for G6P in the reaction catalyzed by Glk	[1]
68	KGlkGLCm	0.154	mM	MM constant for GLC in the reaction catalyzed by Glk	[1]
69	KIcdhICIT	2.01E-4	mM	MM constant for ICIT in the reaction catalyzed by Icdh	[1]
70	KIcdhPEP	0.0548	mM	MM constant for PEP in the reaction catalyzed by Icdh	[1]
71	KIcl3PG	0.522	mM	MM constant for 3PG in the reaction catalyzed by Icl	[1]
72	KIclICIT	0.00755	mM	MM constant for ICIT in the reaction catalyzed by Icl	[1]
73	KIclPEP	0.0163	mM	MM constant for PEP in the reaction catalyzed by Icl	[1]
74	KIclaKG	0.834	mM	MM constant for aKG in the reaction catalyzed by Icl	[1]
75	KMaeBAcCoA	1.82	mM	MM constant for AcCoA in the reaction catalyzed by MaeB	[1]
76	KMaeBMAL	0.00146	mM	MM constant for MAL in the reaction catalyzed by MaeB	[1]
77	KMaeBcAMP	4.55	mM	MM constant for cAMP in the reaction catalyzed by MaeB	[1]
78	KMdhMALI	0.346	mM	Inhibition constant for MAL in the reaction catalyzed by Mdh	[1]
79	KMdhMALm	0.177	mM	MM constant for MAL in the reaction catalyzed by Mdh	[1]
80	KMdhNADHI	0.0248	mM	Inhibition constant for NADH in the reaction catalyzed by Mdh	[1]
81	KMdhNADHm	0.0313	mM	MM constant for NADH in the reaction catalyzed by Mdh	[1]
82	KMdhNADI	0.114	mM	Inhibition constant for NAD in the reaction catalyzed by Mdh	[1]
83	KMdhNADII	0.945	mM	Inhibition constant for NAD in the reaction catalyzed by Mdh	[1]
84	KMdhNADm	0.0522	mM	MM constant for NAD in the reaction catalyzed by Mdh	[1]
85	KMdhOAAI	0.344	mM	Inhibition constant for OAA in the reaction catalyzed by Mdh	[1]
86	KMdhOAAII	0.0732	mM	Inhibition constant for OAA in the reaction catalyzed by Mdh	[1]
87	KMdhOAAm	0.208	mM	MM constant for OAA in the reaction	[1]

				catalyzed by Mdh	
88	KMdheq	0.75	mM	Equilibrium constant for the reaction catalyzed by Mdh	[1]
89	KMsAcCoA	0.0462	mM	MM constant for AcCoA in the reaction catalyzed by Ms	[1]
90	KMsGOX	1.11	mM	MM constant for GOX in the reaction catalyzed by Ms	[1]
91	KMsGOXAcCoA	0.0396	mM	Combined MM constant for GOX and AcCoA in the reaction catalyzed by Ms	[1]
92	KNonptsI	0.01	mM	MM constant for GLC in the NonPTS GLC uptake	[1]
93	KNonptsS	1.55	mM	Inhibition constant for EIIA in the NonPTS GLC uptake	[1]
94	KOPFADH2	0.02	mM	MM constant for FADH2 in the oxidative phosphorylation	Derived based on [1]
95	KOPNADH	0.03	mM	MM constant for NADH in the oxidative phosphorylation	Derived based on [1]
96	KOPO	0.03	mM	MM constant for oxygen in the oxidative phosphorylation	Derived based on [1]
97	KPckADPi	0.0198	mM	Inhibition constant for ADP in the reaction catalyzed by Pck	[1]
98	KPckATPI	0.0398	mM	Inhibition constant for ATP in the reaction catalyzed by Pck	[1]
99	KPckATPi	0.0401	mM	Inhibition constant for ATP in the reaction catalyzed by Pck	[1]
100	KPckOAA	0.578	mM	MM constant for OAA in the reaction catalyzed by Pck	[1]
101	KPckOAAI	0.347	mM	Inhibition constant for OAA in the reaction catalyzed by Pck	[1]
102	KPckPEP	0.0701	mM	MM constant for PEP in the reaction catalyzed by Pck	[1]
103	KPckPEPi	0.06	mM	Inhibition constant for PEP in the reaction catalyzed by Pck	[1]
104	KPdhAcCoAm	0.008	mM	MM constant for AcCoA in the reaction catalyzed by Pdh	[1]
105	KPdhCoAm	0.00482	mM	MM constant for CoA in the reaction catalyzed by Pdh	[1]

106	KPdhNADHm	0.0471	mM	MM constant for NADH in the reaction catalyzed by Pdh	[1]
107	KPdhNADm	0.401	mM	MM constant for NAD in the reaction catalyzed by Pdh	[1]
108	KPdhPYRm	1.0	mM	MM constant for PYR in the reaction catalyzed by Pdh	[1]
109	KPdhRPYR	0.0434	mM	MM constant for PYR in the reaction catalyzed by PdhR	[1]
110	KPdhi	68.3	mM	Inhibition constant for NADH/NAD in the reaction catalyzed by Pdh	[1]
111	KPfkADPa	277.0	mM	MM constant for ADP in the reaction catalyzed by Pfk	[1]
112	KPfkADPb	0.256	mM	MM constant for ADP in the reaction catalyzed by Pfk	[1]
113	KPfkADPc	0.448	mM	Inhibition constant for ADP in the reaction catalyzed by Pfk	[1]
114	KPfkAMPa	10.1	mM	MM constant for AMP in the reaction catalyzed by Pfk	[1]
115	KPfkAMPb	0.0255	mM	MM constant for AMP in the reaction catalyzed by Pfk	[1]
116	KPfkATPs	0.161	mM	MM constant for ATP in the reaction catalyzed by Pfk	[1]
117	KPfkF6Ps	0.0211	mM	MM constant for F6P in the reaction catalyzed by Pfk	[1]
118	KPfkPEP	1.74	mM	MM constant for PEP in the reaction catalyzed by Pfk	[1]
119	KPgiF6P	0.342	mM	MM constant for F6P in the reaction catalyzed by Pgi	[1]
120	KPgiF6P6pginh	0.199	mM	Inhibition constant for F6P in the reaction catalyzed by Pgi	[1]
121	KPgiG6P	2.46	mM	MM constant for G6P in the reaction catalyzed by Pgi	[1]
122	KPgiG6P6pginh	0.181	mM	Inhibition constant for 6PG in the reaction catalyzed by Pgi	[1]
123	KPgieq	1.44	mM	Equilibrium constant for the reaction catalyzed by Pgi	[1]
124	KPgl6PGLm	0.023	mM	MM constant for 6PGL in the reaction catalyzed by Pgl	[1]
125	KPgl6PGm	10.0	mM	MM constant for 6PG in the reaction catalyzed by Pgl	[1]
126	KPgleq	42.7	mM	Equilibrium constant for the reaction	[1]

				catalyzed by Pgl	
127	KPglh1	0.00437	mM	Proton effect efficency in the reaction catalyzed by Pgl	[1]
128	KPglh2	9.7E-6	mM	Proton effect efficency in the reaction catalyzed by Pgl	[1]
129	KPpcFBP	0.189	mM	MM constant for FBP in the reaction catalyzed by Ppc	[1]
130	KPpcPEP	0.0272	mM	MM constant for PEP in the reaction catalyzed by Ppc	[1]
131	KPpsPEP	2.16E-4	mM	MM constant for PEP in the reaction catalyzed by Pps	[1]
132	KPpsPYR	7.13E-4	mM	MM constant for PYR in the reaction catalyzed by Pps	[1]
133	KPtaAcCoAi	0.201	mM	Inhibition constant for AcCoA in the reaction catalyzed by Pta	[1]
134	KPtaAcPi	0.32	mM	Inhibition constant for AcP in the reaction catalyzed by Pta	[1]
135	KPtaAcPm	0.229	mM	MM constant for AcP in the reaction catalyzed by Pta	[1]
136	KPtaCoAi	0.081	mM	Inhibition constant for CoA in the reaction catalyzed by Pta	[1]
137	KPtaPii	2.11	mM	Inhibition constant for Pi in the reaction catalyzed by Pta	[1]
138	KPtaPim	0.687	mM	MM constant for Pi in the reaction catalyzed by Pta	[1]
139	KPtaeq	0.0284	mM	Equilibrium constant for the reaction catalyzed by Pta	[1]
140	KPtsEIIA	0.00211	mM	MM constant for EIIA in the PTS GLC uptake	[1]
141	KPtsGLC	0.0049	mM	MM constant for GLC in the PTS GLC uptake	[1]
142	KPykADP	0.21	mM	MM constant for ADP in the reaction catalyzed by Pyk	[1]
143	KPykAMP	0.255	mM	MM constant for AMP in the reaction catalyzed by Pyk	[1]
144	KPykATP	20.2	mM	MM constant for ATP in the reaction catalyzed by Pyk	[1]
145	KPykFBP	0.253	mM	MM constant for FBP in the reaction catalyzed by Pyk	[1]
146	KPykPEP	0.31	mM	MM constant for PEP in the reaction catalyzed by Pyk	[1]

147	KR5pieq	0.477	mM	Equilibrium constant in the reaction catalyzed by R5pi	[1]
148	KRpeeq	1.41	mM	Equilibrium constant for the reaction catalyzed by Rpe	[1]
149	KSdhSUCm	0.169	mM	MM constant for SUC in the reaction catalyzed by Sdh	[1]
150	KSdheq	29.7	mM	Equilibrium constant for the reaction catalyzed by Sdh	[1]
151	KTaleq	1.05	mM	Equilibrium constant for the reaction catalyzed by Tal	[1]
152	KTkt1eq	1.2	mM	Equilibrium constant for the reaction catalyzed by Tkt	[1]
153	KTkt2eq	9.97	mM	Equilibrium constant for the reaction catalyzed by Tkt	[1]
154	K_A	0.05	gA/L	Acetate affinity constant	[2]
155	K_S	0.05	gS/L	Substrate affinity constant	[2]
156	K_i_O	4.0	gA/L	Oxygen uptake inhibition constant by acetate	[2]
157	K_i_S	5.0	gA/L	Substrate uptake inhibition constant by acetate	[2]
158	KaceBAKCra	5.4E-4	mM	MM constant for Cra in the reaction of aceBAK expression	[1]
159	KaceBAKCrp	0.526	mM	MM constant for Crp in the reaction of aceBAK expression	[1]
160	KaceBAKDNA	9.51E-7	mM	Affinity constant of IclR to aceBAK DNA	[1]
161	KaceBAKGOX	0.00225	mM	MM constant for GOX in the reaction of aceBAK expression	[1]
162	KaceBAKPYR	2.01	mM	MM constant for PYR in the reaction of aceBAK expression	[1]
163	KaceBAKPYRprime	0.00272	mM	Affinity constant of PYR to IclR in the reaction of aceA expression	[1]
164	KacsCrp	0.00136	mM	MM constant for Crp in the reaction of acs expression	[1]
165	KakgdhCoAm	0.0031	mM	MM constant for CoA in the reaction catalyzed by akgdh	[1]
166	KakgdhNADHI	0.0179	mM	Inhibition constant for NADH in the reaction catalyzed by akgdh	[1]
167	KakgdhNADm	0.0552	mM	MM constant for NAD in the reaction catalyzed by akgdh	[1]
168	KakgdhSUCI	2.07	mM	Inhibition constant for SUC in the	[1]

				reaction catalyzed by akgdh	
169	KakgdhZ	4.17	mM	Sequential binding constant for SUC and NADH in the reaction catalyzed by akgdh	[1]
170	KakgdhaKGI	1.0	mM	Inhibition constant for aKG in the reaction catalyzed by akgdh	[1]
171	KakgdhaKGm	0.237	mM	MM constant for aKG in the reaction catalyzed by akgdh	[1]
172	KcAMPdegrcAMP	0.0483	mM	MM constant for cAMP in the reaction of cAMP degradation	[1]
173	KfbaACra	0.00326	mM	MM constant for Cra in the reaction of fbaA expression	[1]
174	KfbaACrp	0.00948	mM	MM constant for Crp in the reaction of fbaA expression	[1]
175	KfbpCra	3.75E-5	mM	MM constant for Cra in the reaction of fbp expression	[1]
176	KfumABCCrp	0.149	mM	MM constant for Crp in the reaction of fumABC expression	[1]
177	KgapACra	0.0161	mM	MM constant for Cra in the reaction of gapA expression	[1]
178	KgapACrp	0.0475	mM	MM constant for Crp in the reaction of gapA expression	[1]
179	KglkCra	1.22E-8	mM	MM constant for Cra in the reaction of glk expression	[1]
180	KgltACrp	0.0565	mM	MM constant for Crp in the reaction of gltA expression	[1]
181	KicdACra	2.92E-5	mM	MM constant for Cra in the reaction of icdA expression	[1]
182	KlpdPdhR	2.46E-5	mM	MM constant for PdhR in the reaction of lpd expression	[1]
183	KmdhCrp	0.214	mM	MM constant for Crp in the reaction of mdh expression	[1]
184	Kmu	0.6	mM	Saturation constant by mu in the reaction of aceA expression	[1]
185	KpckACra	1.52E-4	mM	MM constant for Cra in the reaction of pckA expression	[1]
186	KpfkACra	9.87E-9	mM	MM constant for Cra in the reaction of pfkA expression	[1]
187	KppsACra	4.88E-4	mM	MM constant for Cra in the reaction of ppsA expression	[1]
188	KpykFCra	7.26E-5	mM	MM constant for Cra in the reaction	[1]

				of pykF expression	
189	KsdhCDABCrp	0.0856	mM	MM constant for Crp in the reaction of sdhCDAB expression	[1]
190	KsucABCrp	0.309	mM	MM constant for Crp in the reaction of sucAB expression	[1]
191	L	2.32	m	Impeller spacing	[2]
192	L1	1.271	m	Bottom impeller clearing	[2]
193	LAceK	2.83E8	1	Allosteric regulation efficiency of AceK by OAA	[1]
194	LAceKph	70000.0	1	Allosteric regulation efficiency	[1]
195	LFbp	4410000.0	1	Allosteric regulation efficiency of Fbp by PEP	[1]
196	LIcdh	92.6	1	Allosteric regulation efficiency of Icdh by PEP	[1]
197	LIcl	191000.0	1	Allosteric regulation efficiency of Icl by PEP, GAP and aKG	[1]
198	LMaeB	239000.0	1	Allosteric regulation efficiency of MaeB by AcCoA and cAMP	[1]
199	LPfk	1770000.0	1	Allosteric regulation efficiency of Pfk by F6P	[1]
200	LPpc	5650000.0	1	Allosteric regulation efficiency of Ppc by FBP	[1]
201	LPps	1.04E-79	1	Allosteric regulation efficiency of Pps by PEP	[1]
202	LPyk	997.0	1	Allosteric regulation efficiency of Pyk by ATP, AMP and FBP	[1]
203	LaceBAK	412.0	1	Allosteric regulation efficiency	[1]
204	MW_g	0.02897	kg/mol	Molecular weight of air	[2]
205	NAD	2.6	mM	Nicotinamide adenine dinucleotide	[1]
206	NADH	0.083	mM	Nicotinamide adenine dinucleotide, reduced	[1]
207	NADP	0.0021	mM	Dihydronicotinamide adenine dinucleotide phosphate	[1]
208	NADPH	0.12	mM	Dihydronicotinamide adenine dinucleotide phosphate reduced	[1]
209	N_P	6.0	1	Power number	[2]
210	N_rpm	80.0	1/min	80 or 140 ! Stirrer speed	[2]
211	POratio	3.48	1	P/O ratio for NADH	[1]
212	POratioprime	1.49	1	P/O ratio for FADH2	[1]
213	PdhRtotal	6.66E-5	mM	PdhR total concentration	[1]

214	Pi	10.0	mM	Inorganic phosphate concentration	[1]
215	R	8.3145	J/mol/K	Ideal gas constant	[2]
216	SSMaeB	0.0075	mM	Malic enzyme steady state concentration	[1]
217	SSPpc	0.0074	mM	Phosphoenolpyruvate carboxylase steady state concentration	[1]
218	T	3.476	m	Tank diameter	[2]
219	Temp	303.15	K	Temperature	[2]
220	Temp_C	30.0	C	Temperature (C)	[2]
221	VFbablf	1.54	1	Forward and backward reaction rates ratio	[1]
222	V_1	30.0	m^3	Compartment 1 volume	[2]
223	V_2	20.0	m^3	Compartment 2 volume	[2]
224	V_3	20.0	m^3	Compartment 3 volume	[2]
225	V_4	20.0	m^3	Compartment 4 volume	[2]
226	V_i	30.0	m^3	Compartment volume	[2]
227	X_initial	30.0	g/L	Initial external biomass concentration	[2]
228	Y_AO	33.3	mmolO/gA	Oxygen yield on acetate	[2]
229	Y_AX	0.4	gX/gA	Biomass yield on acetate	[2]
230	Y_SA	0.667	gA/gS	Acetate yield on substrate	[2]
231	Y_SO	33.3	mmolO/gS	Oxygen yield on substrate	[2]
232	Y_SX_of	0.15	gX/gS	Biomass yield on substrate (overflow)	[2]
233	Y_SX_ox	0.5	gX/gS	Biomass yield on substrate (oxidative)	[2]
234	aceBAKDNA	5.15E-7	mM	aceBAK DNA concentration	[1]
235	eta	0.001	Pa*s	Dynamic viscosity of water	[2]
236	g	9.81	m/s^2	Gravitational acceleration	[2]
237	i_1	1.0	1	Compartment 1 number	[2]
238	i_2	2.0	1	Compartment 2 number	[2]
239	i_3	3.0	1	Compartment 3 number	[2]
240	i_4	4.0	1	Compartment 4 number	[2]
241	i_comp	1.0	1	Compartment number	[2]
242	icdhb	6.0E-7	mM	Isocitrate dehydrogenase basal concentration	[1]
243	kATP	1.26E-5	1/mM	Growth rate linear correlation to ATP production	[1]
244	kAceKkicat	1.0E16	1	Catalytic constant in the reaction catalyzed by AceK	[1]
245	kAceKphcat	600.0	1	Catalytic constant in the reaction	[1]

				catalyzed by AceK	
246	kAcscat	129000.0	1	Catalytic constant for the reaction catalyzed by Acs	[1]
247	kBMGLCAcCoA	1659.0	1/h	BM production constant from precussor AcCoA	[1]
248	kBMGLCE4P	1510.0	1/h	BM production constant from precussor E4P	[1]
249	kBMGLCF6P	1270.0	1/h	BM production constant from precussor F6P	[1]
250	kBMGLCFUM	3470.0	1/h	BM production constant from precussor FUM	[1]
251	kBMGLCG6P	48.9	1/h	BM production constant from precussor G6P	[1]
252	kBMGLCGAP	102.0	1/h	BM production constant from precussor GAP	[1]
253	kBMGLCOAA	23100.0	1/h	BM production constant from precussor OAA	[1]
254	kBMGLCPEP	957.0	1/h	BM production constant from precussor PEP	[1]
255	kBMGLCPYR	851.0	1/h	BM production constant from precussor PYR	[1]
256	kBMGLCR5P	308.0	1/h	BM production constant from precussor R5P	[1]
257	kBMGLCSUC	190.0	1/h	BM production constant from precussor SUC	[1]
258	kBMGLCaKG	300.0	1/h	BM production constant from precussor aKG	[1]
259	kCscat	5430000.0	1	Catalytic constant for the reaction catalyzed by Cs	[1]
260	kFbacat	6.95E8	1	Catalytic constant for the reaction catalyzed by Fba	[1]
261	kFbpcat	7.86E7	1	Catalytic constant for the reaction catalyzed by Fbp	[1]
262	kFum1cat	3820000.0	1	Catalytic constant for the reaction catalyzed by Fum	[1]
263	kFum2cat	3820000.0	1	Catalytic constant for the reaction catalyzed by Fum	[1]
264	kGapdhcat	5.05E9	1	Catalytic constant for the reaction catalyzed by Gapdh	[1]
265	kGlkcat	2.01E7	1	Catalytic constant for the reaction catalyzed by Glk	[1]

266	kIcdhcat	3.432E7	1	Catalytic constant for the reaction catalyzed by Icdh	[1]
267	kIclcat	9.42E7	1	Catalytic constant for the reaction catalyzed by Icl	[1]
268	kMaeBcat	1.84E7	1	Catalytic constant for the reaction catalyzed by MaeB	[1]
269	kMdh1cat	2.3E7	1	Catalytic constant for the reaction catalyzed by Mdh	[1]
270	kMdh2cat	2.3E7	1	Catalytic constant for the reaction catalyzed by Mdh	[1]
271	kMscat	1.7E10	1	Catalytic constant for the reaction catalyzed by Ms	[1]
272	kPckcat	3.45E7	1	Catalytic constant for the reaction catalyzed by Pck	[1]
273	kPdhcat	4.83E7	1	Catalytic constant for the reaction catalyzed by Pdh	[1]
274	kPfkcat	2.49E11	1	Catalytic constant for the reaction catalyzed by Pfk	[1]
275	kPpccat	485100.0	1	Catalytic constant for the reaction catalyzed by Ppc	[1]
276	kPpscat	249000.0	1	Catalytic constant for the reaction catalyzed by Pps	[1]
277	kPts1	66000.0	1/mM/h	Conductivity constant	[1]
278	kPykcat	816000.0	1	Catalytic constant for the reaction catalyzed by Pyk	[1]
279	kSdh1cat	1960000.0	1	Catalytic constant for the reaction catalyzed by Sdh	[1]
280	kSdh2cat	1960000.0	1	Catalytic constant for the reaction catalyzed by Sdh	[1]
281	k_mu	1.0	1	0 or 1 ǀ Growth rate metabolic part	[2]
282	k_mu_add	1.0	1	0 or 1 ǀ Growth rate compartment part	[2]
283	kaceBAKcatIclR	0.32	1/h	Catalytic constant	[1]
284	kakgdhcat	702000.0	1	Catalytic constant for the reaction catalyzed by akgdh	[1]
285	kdegr	0.33	1/h	Degradation constant	[1]
286	kmPts1	27700.0	1/mM/h	Conductivity constant	[1]
287	nAceK	5.0	1	Hill coefficient for the reaction catalyzed by AceK	[1]
288	nAceKph	5.0	1	Hill coefficient in the reaction catalyzed by AceK	[1]

289	nCraFBP	2.0	1	Hill coefficient in the Cra-FBP complex production	[1]
290	nCrpcAMP	1.0	1	Hill coefficient in the Crp-cAMP complex production	[1]
291	nFbp	4.0	1	Hill coefficient for the reaction catalyzed by Fbp	[1]
292	nIcdh	2.0	1	Hill coefficient for the reaction catalyzed by Icdh	[1]
293	nIcl	4.0	1	Hill coefficient for the reaction catalyzed by Icl	[1]
294	nMaeB	1.99	1	Hill coefficient for the reaction catalyzed by MaeB	[1]
295	nPdhRPYR	1.0	1	Hill coefficient in the PdhR-PYR complex production	[1]
296	nPfk	4.0	1	Hill coefficient for the reaction catalyzed by Pfk	[1]
297	nPpc	5.0	1	Hill coefficient for the reaction catalyzed by Ppc	[1]
298	nPps	2.0	1	Hill coefficient for the reaction catalyzed by Pps	[1]
299	nPyk	4.0	1	Hill coefficient for the reaction catalyzed by Pyk	[1]
300	nacs	2.31	1	Hill coefficient for the reaction of acs expression	[1]
301	nfumABC	0.74	1	Hill coefficient for the reaction of fumABC expression	[1]
302	ngltA	1.07	1	Hill coefficient for the reaction of gltA expression	[1]
303	nmu	4.0	1	Complexity coefficient by mu in the reaction of aceA expression	[1]
304	nsdhCDAB	0.74	1	Hill coefficient for the reaction of sdhCDAB expression	[1]
305	nsucAB	0.74	1	Hill coefficient for the reaction of sucAB expression	[1]
306	pH	7.5	1	Intracellular pH	[1]
307	pHEdam	10.4	1	Enzyme pH coefficient	[1]
308	pHEddm	7.53	1	Enzyme pH coefficient	[1]
309	pKEda	37.0	1	Enzyme pH coefficient	[1]
310	pKEdd	8.74	1	Enzyme pH coefficient	[1]
311	p_atm	1.013	bar	Atmospheric pressure	[2]

312	p_head	0.0	bar	0 or 1 | Bioreactor excess (gauge) head pressure	[2]
313	q_A_c_max	0.15	gA/gX/h	Maximal specific acetate consumption rate	[2]
314	q_O_max	15.0	mmolO/gX/h	Maximal specific oxygen uptake rate	[2]
315	q_S_feed	0.08	gS/gX/h	Biomass specific feed rate	[2]
316	q_S_max	1.3	gS/gX/h	Maximal specific substrate uptake rate	[2]
317	q_m_max	0.04	gS/gX/h	Maximum maintenance coefficient	[2]
318	rho	564.0	gX/L	Cell density	[2]
319	ro_L	1050.0	kg/m^3	Broth density	[2]
320	v6Pgdhmax	248000.0	mM/h	Maximal rate of the reaction catalyzed by 6Pgdh	[1]
321	vAckmax	195000.0	mM/h	Maximal rate of the reaction catalyzed by Ack	[1]
322	vCyamax	9.45	mM/h	Maximal rate of the reaction catalyzed by Cya	[1]
323	vEdamax	667.0	mM/h	Maximal rate of the reaction catalyzed by Eda	[1]
324	vEddmax	515.0	mM/h	Maximal rate of the reaction catalyzed by Edd	[1]
325	vG6pdhmax	16600.0	mM/h	Maximal rate of the reaction catalyzed by G6pdh	[1]
326	vNonptsmax	4000.0	mM/h	Reaction maximal rate	[1]
327	vOPmax	1.0	mM/h	Maximum oxidative phosphorylation rate	[2]
328	vPgimax	3560000.0	mM/h	Maximal rate of the reaction catalyzed by Pgi	[1]
329	vPglmax	22800.0	mM/h	Maximal rate of the reaction catalyzed by Pgl	[1]
330	vPtamax	5360.0	mM/h	Maximal rate of the reaction catalyzed by Pta	[1]
331	vPts4max	3940.0	mM/h	Reaction maximal rate	[1]
332	vR5pimax	32100.0	mM/h	Reaction maximal rate	[1]
333	vRpemax	12700.0	mM/h	Maximal rate of the reaction catalyzed by Rpe	[1]
334	vTalmax	71700.0	mM/h	Maximal rate of the reaction catalyzed by Tal	[1]
335	vTkt1max	8870.0	mM/h	Maximal rate of the reaction catalyzed by Tkt	[1]

336	vTkt2max	380000.0	mM/h	Maximal rate of the reaction catalyzed by Tkt	[1]
337	vaceBAKCrabound	0.0037	mM/h	Rate of aceBAK expression with bound Cra	[1]
338	vaceBAKCraunbound	1.27E-5	mM/h	Rate of aceBAK expression with unbound Cra	[1]
339	vaceBAKCrpbound	1.58E-6	mM/h	Rate of aceBAK expression with bound Crp	[1]
340	vaceBAKCrpunbound	2.51E-4	mM/h	Rate of aceBAK expression with unbound Crp	[1]
341	vacsCrpbound	0.00262	mM/h	Rate of acs expression with bound Crp	[1]
342	vacsCrpunbound	0.0	mM/h	Rate of acs expression with unbound Crp	[1]
343	vcAMPdegrmax	9.21	mM/h	Reaction maximal rate	[1]
344	vfbaACrabound	0.0	mM/h	Rate of fbaA expression with bound Cra	[1]
345	vfbaACraunbound	0.00183	mM/h	Rate of fbaA expression with unbound Cra	[1]
346	vfbaACrpbound	0.00113	mM/h	Rate of fbaA expression with bound Crp	[1]
347	vfbaACrpunbound	0.0	mM/h	Rate of fbaA expression with unbound Crp	[1]
348	vfbpCrabound	0.00103	mM/h	Rate of fbp expression with bound Cra	[1]
349	vfbpCraunbound	0.0	mM/h	Rate of fbp expression with unbound Cra	[1]
350	vfumABCCrpbound	0.0376	mM/h	Rate of fumABC expression with bound Crp	[1]
351	vfumABCCrpunbound	0.0	mM/h	Rate of fumABC expression with unbound Crp	[1]
352	vgapACrabound	0.0	mM/h	Rate of gapA expression with bound Cra	[1]
353	vgapACraunbound	0.0016	mM/h	Rate of gapA expression with unbound Cra	[1]
354	vgapACrpbound	0.00218	mM/h	Rate of gapA expression with bound Crp	[1]
355	vgapACrpunbound	0.0	mM/h	Rate of gapA expression with unbound Crp	[1]
356	vglkCrabound	0.00113	mM/h	Rate of glk expression with bound Cra	[1]

357	vglkCraunbound	0.15	mM/h	Rate of glk expression with unbound Cra	[1]
358	vgltACrpbound	0.0205	mM/h	Rate of gltA expression with bound Crp	[1]
359	vgltACrpunbound	0.0	mM/h	Rate of gltA expression with unbound Crp	[1]
360	vicdACrabound	0.00142	mM/h	Rate of icdA expression with bound Cra	[1]
361	vicdACraunbound	5.13E-4	mM/h	Rate of icdA expression with unbound Cra	[1]
362	vlpdPdhRbound	5.45E-5	mM/h	Rate of lpd expression with bound PdhR	[1]
363	vlpdPdhRunbound	0.00929	mM/h	Rate of lpd expression with unbound PdhR	[1]
364	vmdhCrpbound	0.0733	mM/h	Rate of mdh expression with bound Crp	[1]
365	vmdhCrpunbound	0.0	mM/h	Rate of mdh expression with unbound Crp	[1]
366	vpckACrabound	0.00995	mM/h	Rate of pckA expression with bound Cra	[1]
367	vpckACraunbound	0.0	mM/h	Rate of pckA expression with unbound Cra	[1]
368	vpfkACrabound	0.00103	mM/h	Rate of pfkA expression with bound Cra	[1]
369	vpfkACraunbound	0.0375	mM/h	Rate of pfkA expression with unbound Cra	[1]
370	vppsACrabound	0.00386	mM/h	Rate of ppsA expression with bound Cra	[1]
371	vppsACraunbound	0.0	mM/h	Rate of ppsA expression with unbound Cra	[1]
372	vpykFCrabound	3.12E-5	mM/h	Rate of pykF expression with bound Cra	[1]
373	vpykFCraunbound	0.0082	mM/h	Rate of pykF expression with unbound Cra	[1]
374	vsdhCDABCrpbound	0.0177	mM/h	Rate of sdhCDAB expression with bound Crp	[1]
375	vsdhCDABCrpunbound	0.0	mM/h	Rate of sdhCDAB expression with unbound Crp	[1]
376	vsucABCrpbound	0.174	mM/h	Rate of sucAB expression with bound Crp	[1]
377	vsucABCrpunbound	0.0	mM/h	Rate of sucAB expression with	[1]

				unbound Crp	
378	y_O_bottom	0.2095	1	Special case for yO to account for yO "below" the bottom compartment	[2]

Abbreviations: BM – biomass, MM – Michaelis–Menten.

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