Supplementary Table 1. Metabolic flux distributions determined using ^{13}C-tracers.

Reaction		Substrates	Products	Mammalian iBMK cells			Yeast			E. coli		
				flux	L.B.	U.B.	flux	L.B.	U.B.	flux	L.B.	U.B.
Glc Uptake	net	GLC	G6P	2.30	2.29	2.30	69.0	63.7	69.1	76.0	75.3	77.2
PGI	net	G6P	F6P	2.21	2.21	2.22	64.0	59.0	64.2	59.5	58.5	60.9
	xch			44.82	4.88	157.81	542.4	238.5	5024.6	67.9	45.8	87.9
	for			47.04	7.10	160.03	606.4	210.1	5083.5	127.4	105.2	147.6
	rev			44.82	4.88	157.81	542.4	147.6	5024.6	67.9	45.8	87.9
PFK	net	F6P	FBP	2.22	2.22	2.23	63.5	58.2	64.4	62.9	62.1	64.4
	xch			0.24	-	0.24	0.9	-	0.9	3.1	-	5.2
	for			2.46	-	2.47	64.3	-	64.4	66.0	-	68.3
	rev			0.24	-	0.24	0.9	-	0.9	3.1	-	5.2
FBA	net	FBP	DHAP + GAP	2.22	2.22	2.23	63.5	58.2	64.4	62.9	62.7	64.3
	xch			0.38	0.35	0.43	158.4	136.4	160.8	54.6	50.1	58.8
	for			2.61	2.58	2.66	221.9	194.7	224.3	117.5	112.3	122.8
	rev			0.38	0.35	0.43	158.4	136.4	160.8	54.6	50.1	58.8
TPI	net	DHAP	GAP	2.18	2.18	2.19	54.2	49.1	54.3	62.3	61.4	63.8
	xch			5.95	5.90	6.48	185.7	147.5	185.7	174.4	160.6	187.4
	for			8.13	8.08	8.66	239.9	196.4	239.9	236.7	222.5	249.8
	rev			5.95	5.90	6.48	185.7	147.5	185.7	174.4	160.6	187.4
GAPD	net	GAP	13BPG	4.41	4.40	4.42	117.9	107.7	118.1	130.3	128.9	133.0
PGK	net	13BPG	3PG	4.41	4.40	4.42	117.9	107.7	118.1	130.3	128.9	133.0
PGM	net	3PG	2PG	4.16	4.15	4.16	106.3	106.3	106.3	122.2	121.7	123.7
ENO	net	2PG	PEP	4.16	4.15	4.16	106.3	106.3	106.3	122.2	121.7	123.7
PYK	net	PEP	Pyr	4.16	4.15	4.16	105.4	105.4	106.4	98.9	98.8	100.0
G6PDH	net	G6P	6PG	0.05	0.03	0.05	2.0	1.9	2.1	15.4	15.3	15.9
GND	net	6PG	Ru5P + CO2	0.05	0.03	0.05	2.0	1.9	2.1	11.6	11.1	12.0
	xch			0.00	0.00	0.00	0.0	0.0	0.0	0.1	0.0	0.3
	for			0.05	0.03	0.05	2.0	1.9	2.1	11.7	11.3	12.3
	rev			0.00	0.00	0.00	0.0	0.0	0.0	0.1	0.0	0.3
EDD, EDA	net	6PG	Pyr + GAP	-	-	-	-	-	-	3.8	3.5	4.2
RPI	net	Ru5P	R5P	0.04	0.03	0.04	1.2	1.2	1.2	7.8	7.7	7.9
	xch			0.02	0.00	0.26	1.0	0.2	1736.3	5030.9	26.2	6134.7
	for			0.06	0.04	0.29	2.1	1.4	1737.5	5038.7	34.0	6142.5
	rev			0.02	0.00	0.26	1.0	0.2	1736.3	5030.9	26.2	6134.7
RPE	net	Ru5P	X5P	0.01	0.00	0.01	0.8	0.8	0.8	3.8	3.6	4.0
	xch			9.47	0.47	39.76	9.9	9.3	12.6	120.9	102.5	167.6
	for			9.48	0.47	39.76	10.7	10.1	13.5	124.7	106.3	171.4
	rev			9.47	0.47	39.76	9.9	9.3	12.6	120.9	102.5	167.6
TKT1	net	R5P + X5P	S7P + GAP	0.01	0.00	0.01	0.6	0.6	0.6	2.9	2.7	3.1
	xch			0.11	0.08	0.12	8.0	7.0	8.3	17.1	16.2	17.9
	for			0.12	0.08	0.12	8.6	7.6	8.9	19.9	19.1	21.0
	rev			0.11	0.08	0.12	8.0	7.0	8.3	17.1	16.2	17.9
TAL	net	S7P + GAP	E4P + F6P	0.01	0.00	0.01	0.6	0.6	0.7	2.9	2.9	3.0
	xch			0.00	0.00	0.00	0.1	0.0	0.1	0.4	0.3	0.4
	for			0.01	0.00	0.01	0.7	0.6	0.8	3.3	3.1	3.5
	rev			0.00	0.00	0.00	0.1	0.0	0.1	0.4	0.3	0.4
TKT2	net	E4P + X5P	F6P + GAP	0.01	0.00	0.01	0.2	0.2	0.2	0.9	0.8	1.0
	xch			0.02	0.01	0.02	0.4	0.4	0.4	1.1	0.9	1.1
	for			0.02	0.01	0.02	0.6	0.5	0.7	2.0	1.8	2.2
	rev			0.02	0.01	0.02	0.4	0.4	0.4	1.1	0.9	1.1
PDH	net	Pyr	AcCoA + CO2	0.53	0.52	0.54	2.8	2.8	3.2	87.7	87.2	88.5
	xch			0.000	0.000	0.002	0.0	0.0	0.4	0.0	0.0	0.6
	for			0.532	0.522	0.535	2.8	2.8	3.2	87.7	87.2	88.5
	rev			0.000	0.000	0.002	0.0	0.0	0.4	0.0	0.0	0.6
PDC	net	Pyr	AcetAld + CO2	-	-	-	96.1	96.1	96.1	-	-	-
	xch			-	-	-	0.0	0.0	1.1	-	-	-
	for			-	-	-	96.1	96.1	97.2	-	-	-
	rev			-	-	-	0.0	0.0	1.1	-	-	-
CS	net	AcCoA + OAA	Cit/Icit	0.53	0.53	0.54	1.8	1.8	1.8	24.0	23.3	25.0
IDH	net	Cit/Icit	OGA + CO2	0.35	0.35	0.36	1.8	1.8	1.8	23.3	22.7	24.6
	xch			0.04	0.04	0.05	-	-	-	-	-	-
	for			0.40	0.39	0.40	-	-	-	-	-	-
	rev			0.04	0.04	0.05	-	-	-	-	-	-
AKGDH	net	OGA	SuccCoA + CO2	1.08	0.70	1.08	0.0	0.0	0.0	17.6	17.4	18.0
	xch			0.00	0.00	0.00	-	-	-	1.8	0.2	2.6

Reaction		Substrate	Product									
	for			1.08	0.70	1.08	-	-	-	19.5	17.6	20.2
	rev			0.00	0.00	0.00	-	-	-	1.8	0.2	2.6
SUCOAS	net	SuccCoA	Succ	1.08	0.71	1.08	0.0	0.0	0.0	17.6	17.5	18.0
SUCD	net	Succ	Fum	1.08	0.71	1.10	0.0	0.0	0.0	18.3	18.1	19.1
FUM	net	Fum	Mal	1.10	1.09	1.11	0.0	0.0	0.0	18.3	18.1	19.1
	xch			32.57	5.32	239.13	685.4	0.7	2011.6	5597.4	2050.6	6133.1
	for			33.67	6.42	240.23	685.4	0.7	2011.6	5615.6	2068.7	6151.2
	rev			32.57	5.32	239.13	685.4	0.7	2011.6	5597.4	2050.6	6133.1
MDH	net	Mal	OAA	0.56	0.55	0.57	-3.2	-12.6	0.0	18.9	18.1	20.0
	xch			2.44	2.07	3.27	1.7	1.0	3381.0	86.3	67.0	100.2
	for			3.01	2.63	3.83	1.7	1.0	3381.0	105.2	85.5	119.1
	rev			2.44	2.07	3.27	4.8	1.3	3388.6	86.3	67.0	100.2
ME	net	Mal	Pyr + CO2	0.71	0.71	0.72	3.2	0.0	12.6	0.0	0.0	0.4
PC	net	Pyr + CO2	OAA	0.09	0.09	0.10	6.6	3.4	16.5	-	-	-
PPC	net	PEP + CO2	OAA	-	-	-	-	-	-	19.5	19.3	20.1
PPCK	net	OAA	PEP + CO2	-	-	-	0.0	0.0	1.1	-	-	-
ACITL	net	Cit	AcCoA + OAA	0.18	0.18	0.19	-	-	-	-	-	-
Glyoxylate shunt	net	Icit + AcCoA	Succ + Mal	-	-	-	-	-	-	0.6	0.4	0.6
Gln uptake	net		Glutamine	0.88	-	-	-	-	-	-	-	-
Ser uptake	net		Serine	0.13	-	-	-	-	-	-	-	-
Gly uptake	net		Glycine	0.08	-	-	-	-	-	-	-	-
EX_Lac	net		Lactate	4.13	-	-	-	-	-	-	-	-
EX_ACCOA	net		AcCoA for FA	0.18	-	-	-	-	-	-	-	-
EX_AC_EtOH	net		EtOH + Acetate + AcCoA for FA	-	-	-	96.1	-	-	-	-	-
EX_AC	net		Acetate + AcCoA for FA	-	-	-	-	-	-	65.0	-	-
EX_G6P	net		G6P	0.04			3.0			1.1		
EX_F6P	net		F6P	0.0002			1.4			0.4		
EX_DHAP_GLYC3P	net		Glyc3P	0.04			9.3			0.7		
EX_Asn	net		Asn	0.04			0.2			1.3		
EX_Asp	net		Asp	0.05			0.5			1.3		
EX_Gly	net		Gly	0.08			0.5			3.2		
EX_Ile	net		Ile	0.04			0.3			1.5		
EX_Lys	net		Lys	0.08			0.5			1.8		
EX_Met	net		Met	0.02			0.1			0.8		
EX_Thr	net		Thr	0.04			0.3			1.3		
EX_Pyrimidine	net		Pyrimidine - except for dTMP	0.01			0.2			1.6		
EX_dTMP	net		dTMP	0.002			0.0			0.1		
EX_Arg	net		Arg	0.05			0.3			1.6		
EX_Gln	net		Gln	0.05			0.2			1.4		
EX_Glu	net		Glu	0.05			0.5			1.6		
EX_Pro	net		Pro	0.06			0.3			1.2		
EX_Phe	net		Phe	0.04			0.2			0.9		
EX_Trp	net		Trp	0.002			0.0			0.3		
EX_Tyr	net		Tyr	0.02			0.2			0.7		
EX_Cys	net		Cys	0.01			0.0			0.5		
EX_Ser	net		Ser	0.06			0.3			1.8		
EX_Ala	net		Ala	0.12			0.8			2.7		
EX_Leu	net		Leu	0.08			0.5			2.4		
EX_Val	net		Val	0.05			0.5			2.2		
EX_ATP	net		Purine	0.02			0.2			2.3		
EX_His	net		His	0.02			0.1			0.5		