Reaction index	Growth rate	Metabolic Reactions
R00002	0	paps_c + trdrd_c -> 2 h_c + pap_c + so3_c + trdox_c
R00003	0	dhf_c + h_c + nadph_c -> nadp_c + thf_c
R00004	0	h2o_c + imp_c + nad_c -> h_c + nadh_c + xmp_c
R00029	0	atp_c + gly_c + pram_c <-> adp_c + gar_c + h_c + pi_c
R00030	0	atp_c + fpram_c -> adp_c + air_c + 2 h_c + pi_c
R00031	0	h_c + nadph_c + trdox_c -> nadp_c + trdrd_c
R00034	0	udpg_c -> 13BDglcn_c + h_c + udp_c
R00054	0	2oxoadp_m -> 2oxoadp_c
R00073	0	3mob_c <-> 3mob_m
R00099	0	2oxoadp_c + gluL_c <-> L2aadp_c + akg_c
R00113	0	accoa_c + atp_c + hco3_c <-> adp_c + h_c + malcoa_c + pi_c
R00119	0	acglu_m + atp_m -> acg5p_m + adp_m
R00121	0	2obut_m + h_m + pyr_m -> 2ahbut_m + co2_m
R00125	0	h_m + 2 pyr_m -> alacS_m + co2_m
R00138	0	acg5sa_m + gluL_m -> acorn_m + akg_m
R00142	0	ac_c + atp_c + coa_c -> accoa_c + amp_c + ppi_c
R00164	0	aps_c + atp_c -> adp_c + h_c + paps_c
R00165	0	dcamp_c <-> amp_c + fum_c
R00166	0	25aics_c <-> aicar_c + fum_c
R00167	0	aspL_c + gtp_c + imp_c -> dcamp_c + gdp_c + 2 h_c + pi_c
R00168	0	acg5p_m + h_m + nadph_m -> acg5sa_m + nadp_m + pi_m
R00175	0	10fthf_c + aicar_c <-> fprica_c + thf_c
R00176	0	air_c + co2_c <-> 5aizc_c + h_c
R00229	0	anth_c + prpp_c -> ppi_c + pran_c
R00230	0	chor_c + glnL_c -> anth_c + gluL_c + h_c + pyr_c
R00240	0	argsuc_c <-> argL_c + fum_c
R00241	0	aspL_c + atp_c + citrL_c <-> amp_c + argsuc_c + h_c + ppi_c
R00248	0	4pasp_c + h_c + nadph_c -> aspsa_c + nadp_c + pi_c
R00251	0	aspL_c + atp_c + glnL_c + h2o_c -> amp_c + asnL_c + gluL_c + h_c + ppi_c
R00258	0	aspL_c + cbp_c -> cbasp_c + h_c + pi_c
R00261	0	aspL_c + atp_c -> 4pasp_c + adp_c
R00280	0	atp_c + prpp_c -> ppi_c + prbatp_c
R00287	0	h2o_c + pap_c -> amp_c + pi_c
R00308	0	2 atp_c + glnL_c + h2o_c + hco3_c -> 2 adp_c + cbp_c + gluL_c + 2 h_c + pi_c
R00316	0	chor_c -> pphn_c
R00317	0	3psme_c -> chor_c + pi_c
R00329	0	co2_c <-> co2_m
R00342	0	accoa_m + h2o_m + oaa_m -> cit_m + coa_m + h_m
R00379	0	h_c + nadph_c + o2_c + c160coa_c -> 2 h2o_c + nadp_c + c161coa_c
R00380	0	h_c + nadph_c + o2_c + c180coa_c -> 2 h2o_c + nadp_c + c181coa_c
R00381	0	h_c + nadph_c + o2_c + c181coa_c -> 2 h2o_c + nadp_c + c182coa_c
R00385	0	23dhmb_m -> 3mob_m + h2o_m
R00386	0	23dhmp_m -> 3mop_m + h2o_m
R00394	0	dhorS_c + h2o_c <-> cbasp_c + h_c
R00397	0	2dda7p_c -> 3dhq_c + pi_c
R00398	0	3dhq_c -> 3dhsk_c + h2o_c
R00423	0	atp_c + dtmp_c <-> adp_c + dtdp_c
R00571	0	glu5sa_c <-> 1pyr5c_c + h_c + h2o_c
R00582	0	g1p_c + h_c + utp_c <-> ppi_c + udpg_c
R00585	0	10fthf_c + gar_c -> fgam_c + h_c + thf_c
R00610	0	atp_c + gluL_c + nh4_c -> adp_c + glnL_c + h_c + pi_c
R00624	0	glnL_c + h2o_c + prpp_c -> gluL_c + ppi_c + pram_c
R00647	0	atp_c + glnL_c + h2o_c + xmp_c -> amp_c + gluL_c + gmp_c + 2 h_c + ppi_c
R00684	0	b124tc_m + h2o_m <-> hicit_m
R00686	0	accoa_m + akg_m + h2o_m -> coa_m + h_m + hcit_m
R00704	0	hicit_m + nad_m <-> h_m + nadh_m + oxag_m
R00708	0	h2o_c + histd_c + 2 nad_c -> 3 h_c + hisL_c + 2 nadh_c
R00709	0	h2o_c + hisp_c -> histd_c + pi_c
R00725	0	atp_c + homL_c -> adp_c + h_c + phom_c
R00726	0	gluL_c + imacp_c -> akg_c + hisp_c
R00737	0	icit_c + nadp_c -> akg_c + co2_c + nadph_c
R00743	0	glnL_c + prlp_c -> aicar_c + eig3p_c + gluL_c + h_c
R00744	0	eig3p_c -> h2o_c + imacp_c
R00745	0	2cpr5p_c + h_c -> 3ig3p_c + co2_c + h2o_c
R00754	0	h2o_c + imp_c <-> fprica_c
R00764	0	3c2hmp_c + nad_c -> 3c4mop_c + h_c + nadh_c
R00765	0	3c2hmp_c <-> 2ippm_c + h2o_c
R00766	0	2ippm_c + h2o_c <-> 3c3hmp_c
R00770	0	alacS_m + h_m + nadph_m -> 23dhmb_m + nadp_m
R00771	0	2ahbut_m + h_m + nadph_m -> 23dhmp_m + nadp_m
R00782	0	akg_c + leuL_c <-> 4mop_c + gluL_c
R00806	0	hcit_m <-> b124tc_m + h2o_m
R00820	0	5mthf_c + hcysL_c -> h_c + metL_c + thf_c
R00837	0	h2o_c + mi1pD_c -> inost_c + pi_c
R00838	0	g6p_c -> mi1pD_c
R00848	0	2 h_c + mlthf_c + nadph_c -> 5mthf_c + nadp_c
R00873	0	atp_c + udp_c <-> adp_c + utp_c
R00875	0	atp_c + dtdp_c <-> adp_c + dttp_c
R00883	0	nh4_e <-> nh4_c
R00914	0	o2_e <-> o2_c
R00920	0	cbp_c + orn_c -> citrL_c + h_c + pi_c
R00929	0	3c4mop_c + h_c -> 4mop_c + co2_c
R00931	0	h_c + orot5p_c -> co2_c + ump_c
R00934	0	h_c + orn_m <-> h_m + orn_c
R00936	0	acorn_m + gluL_m -> acglu_m + orn_m
R00937	0	orot5p_c + ppi_c <-> orot_c + prpp_c

R00938	0	h_m + oxag_m <-> 2oxoadp_m + co2_m
R00941	0	1pyr5c_c + 2 h_c + nadph_c -> nadp_c + proL_c
R00967	0	g1p_c <-> g6p_c
R00973	0	akg_c + pheL_c <-> gluL_c + phpyr_c
R00979	0	h_e + pi_e <-> h_c + pi_c
R01005	0	h_c + pphn_c -> co2_c + h2o_c + phpyr_c
R01010	0	pran_c -> 2cpr5p_c
R01011	0	h2o_c + prbamp_c -> prfp_c
R01012	0	5aizc_c + aspL_c + atp_c <-> 25aics_c + adp_c + h_c + pi_c
R01013	0	h2o_c + prbatp_c -> h_c + ppi_c + prbamp_c
R01014	0	atp_c + fgam_c + glnL_c + h2o_c -> adp_c + fpram_c + gluL_c + h_c + pi_c
R01015	0	prfp_c -> prlp_c
R01020	0	atp_c + r5p_c <-> amp_c + h_c + prpp_c
R01022	0	pep_c + skm5p_c -> 3psme_c + pi_c
R01086	0	r5p_c <-> ru5pD_c
R01087	0	L2aadp6sa_c + gluL_c + h_c + nadph_c <-> h2o_c + nadp_c + saccrpL_c
R01088	0	h2o_c + nad_c + saccrpL_c <-> akg_c + h_c + lysL_c + nadh_c
R01104	0	3dhsk_c + h_c + nadph_c -> nadp_c + skm_c
R01105	0	atp_c + skm_c -> adp_c + h_c + skm5p_c
R01111	0	so4_e -> so4_c
R01135	0	3 h2o_c + h2s_c + 3 nadp_c <-> 5 h_c + 3 nadph_c + so3_c
R01157	0	h2o_c + phom_c -> pi_c + thrL_c
R01169	0	dump_c + mlthf_c -> dhf_c + dtmp_c
R01184	0	3ig3p_c + serL_c -> g3p_c + h2o_c + trpL_c
R01205	0	atp_c + ump_c <-> adp_c + udp_c
R01224	0	akg_c + valL_c <-> 3mob_c + gluL_c
R01251	0	pe_c <-> pe_m
R01263	0	cdpdag_c + inost_c -> cmp_c + h_c + ptd1ino_c
R01270	0	h_m + ps_m -> co2_m + pe_m
R01282	0	2.902 13BDglcn_c + 6.8 atp_c -> CARBOHYDRATE + 6.8 adp_c + 6.8 pi_c
R01284	0	0.324 pa_c + 0.1 pe_c + 0.1 pc_c + 0.229 ptd1ino_c + 0.038 ps_c -> PHOSPHOLIPID
R01285	0	1.85 atp_c + 0.826 gtp_c + 1.031 ctp_c + 0.662 utp_c -> RNA + 1.85 adp_c + 1.85 pi_c
R01286	0	0.946 datp_c + 0.666 dctp_c + 0.645 dttp_c + 0.666 dgtp_c + 4.4 atp_c -> DNA + 4.4 adp_c + 4.4 pi_c
R01288	0	0.41 PROTEIN + 0.066 RNA + 0.13 DNA + 0.22 PHOSPHOLIPID + 0.314 CARBOHYDRATE -> Biomass
R01289	0	ag3p_c + 0.313 c160coa_c + 0.09 c161coa_c + 0.039 c180coa_c + 0.559 c181coa_c + 0.458 c182coa_c -> coa_c + pa_c

R00028	0.03299	4 focytc_m + 6 h_m + o2_m -> 4 ficytc_m + 6 h_c + 2 h2o_m
R00916	0.03299	o2_c <-> o2_m
R00352	0.03319	2 ficytc_m + 1.5 h_m + q6h2_m -> 2 focytc_m + 1.5 h_c + q6_m
R00284	0.04375	adp_c + atp_m + h_c -> adp_m + atp_c + h_m
R00027	0.09211	adp_m + 3 h_c + pi_m -> atp_m + 2 h_m + h2o_m
R00327	0.11398	co2_e <-> co2_c
R00584	0.15883	g3p_c + nad_c + pi_c <-> 13dpg_c + h_c + nadh_c
R00964	0.15883	3pg_c + atp_c <-> 13dpg_c + adp_c
R00443	0.18183	2pg_c <-> h2o_c + pep_c
R00966	0.18183	2pg_c <-> 3pg_c
R00520	0.18226	accoa_c + 9 h_c + 3 malcoa_c + 6 nadph_c -> 3 co2_c + 3 coa_c + 3 h2o_c + 6 nadp_c + c080coa_c
R00521	0.18226	c080coa_c + 3 h_c + malcoa_c + 2 nadph_c -> co2_c + coa_c + h2o_c + 2 nadp_c + c100coa_c
R00522	0.18226	c100coa_c + 3 h_c + malcoa_c + 2 nadph_c -> co2_c + coa_c + h2o_c + 2 nadp_c + c120coa_c
R01053	0.18305	adp_c + h_c + pep_c -> atp_c + pyr_c
R00506	0.18327	c100_c + 3 h_c + malcoa_c + 2 nadph_c -> co2_c + coa_c + h2o_c + 2 nadp_c + c120_c
R00507	0.18327	c120_c + 3 h_c + malcoa_c + 2 nadph_c -> co2_c + coa_c + h2o_c + 2 nadp_c + c140_c
R01277	0.18327	h2o_c + triglyc_c -> dgr_c + 0.02 c100_c + 0.06 c120_c + h_c + 0.27 c160_c + 0.17 c161_c + 0.05 c180_c + 0.24 c181_c + 0.1 c140_c
R01173	0.18519	dhap_c <-> g3p_c
R00491	0.19111	c161_c + atp_c + coa_c <-> c161coa_c + amp_c + ppi_c
R00493	0.19111	c181_c + atp_c + coa_c <-> c181coa_c + amp_c + ppi_c
R01280	0.19111	dgr_c + 0.02 c100coa_c + 0.06 c120coa_c + 0.17 c161coa_c + 0.24 c181coa_c + 0.27 c160coa_c + 0.05 c180coa_c + 0.1 c140coa_c -> coa_c + triglyc_c
R00952	0.19325	coa_m + nad_m + pyr_m -> accoa_m + co2_m + nadh_m
R00976	0.19474	h_c + pi_c <-> h_m + pi_m
R00492	0.19479	c180_c + atp_c + coa_c <-> c180coa_c + amp_c + ppi_c
R00321	0.19507	cit_c + malL_m <-> cit_m + malL_c
	0.01	1agpc_c + 0.02 c100coa_c + 0.06 c120coa_c + 0.1 c140coa_c + 0.27 c160coa_c + 0.05 c180coa_c + 0.17 c161coa_c + 0.24 c181coa_c -> coa_c +
R01244	0.19641	pc_c
R01249	0.19641	dgr_c + pc_c -> 1agpc_c + triglyc_c
R00599	0.19703	serL_c + thf_c <-> gly_c + h2o_c + mlthf_c
R00948	0.19789	atp_c + hco3_c + pyr_c -> adp_c + h_c + oaa_c + pi_c
R00843	0.19815	h2o_c + methf_c <-> 10fthf_c + h_c
R00621	0.19835	akg_c + h_c + nadph_c + nh4_c -> gluL_c + h2o_c + nadp_c
R00996	0.1985	h2o_c + ppi_c -> h_c + 2 pi_c
R00177	0.1987	akg_m + h_m + lpam_m <-> co2_m + sdhlam_m
R00178	0.1987	coa_m + sdhlam_m -> dhlam_m + succoa_m
R00560	0.1987	fum_m + h2o_m <-> malL_m
R01133	0.1987	atp_m + coa_m + succ_m <-> adp_m + pi_m + succoa_m
R00576	0.19998	g6p_c + nadp_c -> 6pgl_c + h_c + nadph_c
R00648	0.19998	6pgc_c + nadp_c -> co2_c + nadph_c + ru5pD_c
R00965	0.19998	6pgl_c + h2o_c -> 6pgc_c + h_c
R01056	0.20039	h_c + pyr_c -> acald_c + co2_c
R01163	0.2005	r5p_c + xu5p_c <-> g3p_c + s7p_c
R00490	0.20066	c160_c + atp_c + coa_c <-> c160coa_c + amp_c + ppi_c
R00214	0.2008	acald_c + h2o_c + nadp_c -> ac_c + 2 h_c + nadph_c
R01085	0.20094	ru5pD_c <-> xu5p_c
R01164	0.20138	e4p_c + xu5p_c <-> f6p_c + g3p_c
R00630	0.20205	gluL_c -> gluL_m
R00962	0.20214	3pg_c + nad_c -> 3php_c + h_c + nadh_c

R01023	0.20214	3php_c + gluL_c -> akg_c + pserL_c
R01024	0.20214	h2o_c + pserL_c -> pi_c + serL_c
R00600	0.20228	serL_m + thf_m <-> gly_m + h2o_m + mlthf_m
R00644	0.20228	gly_c + h_c <-> gly_m + h_m
R00885	0.20228	nh4_c <-> nh4_m
R00523	0.20248	c120coa_c + 3 h_c + malcoa_c + 2 nadph_c -> co2_c + coa_c + h2o_c + 2 nadp_c + c140coa_c
R00062	0.20284	3c3hmp_c <-> 3c3hmp_m
R00768	0.20284	3mob_m + accoa_m + h2o_m -> 3c3hmp_m + coa_m + h_m
R00738	0.20305	icit_m + nadp_m -> akg_m + co2_m + nadph_m
R00845	0.20305	mlthf_c + nadp_c <-> methf_c + nadph_c
R01216	0.2031	atp_c + dump_c <-> adp_c + dudp_c
R00364	0.20311	atp_c + cmp_c <-> adp_c + cdp_c
R00722	0.20312	aspsa_c + h_c + nadh_c -> homL_c + nad_c
R00174	0.20316	achms_c + h2s_c -> ac_c + h_c + hcysL_c
R00724	0.20316	accoa_c + homL_c <-> achms_c + coa_c
R00185	0.20319	akg_c + alaL_c <-> gluL_c + pyr_c
R00098	0.2032	L2aadp_c + atp_c + h_c + nadh_c -> L2aadp6sa_c + amp_c + nad_c + ppi_c
R00365	0.20321	atp_c + dcmp_c <-> adp_c + dcdp_c
R00372	0.20321	dcmp_c + h_c + h2o_c <-> dump_c + nh4_c
R00874	0.20321	atp_c + cdp_c <-> adp_c + ctp_c
R00878	0.20321	atp_c + dcdp_c <-> adp_c + dctp_c
R00349	0.20323	atp_c + nh4_c + utp_c -> adp_c + ctp_c + 2 h_c + pi_c
R01109	0.20324	adp_c + h_c + so4_c <-> aps_c + pi_c
R00567	0.20325	dhap_c + h_c + nadh_c -> glyc3p_c + nad_c
R01098	0.20325	h_c + serL_c <-> h_m + serL_m
R01290	0.20325	glyc3p_c + 0.313 c160coa_c + 0.09 c161coa_c + 0.039 c180coa_c + 0.559 c181coa_c + 0.458 c182coa_c -> ag3p_c + coa_c
R00053	0.20326	2obut_c <-> 2obut_m
R01239	0.20326	ctp_c + h_c + pa_c <-> cdpdag_c + ppi_c
R01155	0.20327	thrL_c -> 2obut_c + nh4_c
R01004	0.20328	nadp_c + pphn_c -> 34hpp_c + co2_c + nadph_c
R00574	0.20329	glu5p_c + h_c + nadh_c -> glu5sa_c + nad_c + pi_c
R00617	0.20329	atp_c + gluL_c -> adp_c + glu5p_c
R01271	0.20329	cdpdag_c + serL_c <-> cmp_c + h_c + ps_c
R00355	0.2033	cystL_c + h2o_c -> 2obut_c + cysL_c + nh4_c
R00359	0.2033	hcysL_c + serL_c -> cystL_c + h2o_c
R01274	0.2033	ps_c <-> ps_m

R01191	0.20331	10fthf_c + tyrL_c -> Nfortyr_c + h_c + thf_c
R00539	0.20331	10fthf_m + mettrna_m -> fmettrna_m + h_m + thf_m
R01305	0.20331	12pdo_c + nad_c -> laldL_c + nadh_c + h_c
R01304	0.20331	12pdo_e -> 12pdo_c
R00032	0.20331	13BDglcn_c + h2o_c -> glcD_c
R00033	0.20331	13BDglcn_e + h2o_e -> glcD_e
R00416	0.20331	13dpg_c <-> 23dpg_c + h_c
R00718	0.20331	1p3h5c_c + 2 h_c + nadh_c -> 4hproLT_c + nad_c
R00719	0.20331	1p3h5c_c + 2 h_c + nadph_c -> 4hproLT_c + nadp_c
R00969	0.20331	1p3h5c_m + h_m + h2o_m <-> 4hglusa_m
R00968	0.20331	1p3h5c_m + 2 h2o_m + nad_m -> e4hglu_m + h_m + nadh_m
R00940	0.20331	1pyr5c_m + 2 h2o_m + nad_m -> gluL_m + h_m + nadh_m
R00036	0.20331	23camp_c + h_c + h2o_c -> amp2p_c
R00421	0.20331	25dhpp_c + h_c + nadph_c -> 25dthpp_c + nadp_c
R00422	0.20331	25dthpp_c + h_c + h2o_c -> 5aprbu_c + nh4_c
R00544	0.20331	2ahhmd_m + 4abz_m -> dhpt_m + ppi_m
R00395	0.20331	2ahhmp_m + 4abz_m -> dhpt_m + h2o_m
R00717	0.20331	2ahhmp_m + atp_m -> 2ahhmd_m + amp_m + h_m
R00635	0.20331	2aobut_c + coa_c -> accoa_c + gly_c
R00231	0.20331	2aobut_c + h_c -> aact_c + co2_c
R00037	0.20331	2dda7p_c <-> 2dda7p_m
R00418	0.20331	2dhp_c + h_c + nadph_c -> nadp_c + pantR_c
R00038	0.20331	2dhp_c <-> 2dhp_m
R00419	0.20331	2dhp_m + h_m + nadph_m -> nadp_m + pantR_m
R00039	0.20331	2doxg6p_c + h2o_c -> 2dglc_c + pi_c
R00040	0.20331	2hb_c + nad_c <-> 2obut_c + h_c + nadh_c
R00041	0.20331	2hb_e + h_e -> 2hb_c + h_c
R00044	0.20331	2hp6mbq_m + amet_m -> 2hpmmbq_m + ahcys_m + h_m
R00043	0.20331	2hp6mp_m + o2_m -> 2hp6mbq_m + h2o_m
R00042	0.20331	2hpmhmbq_m + amet_m -> ahcys_m + h_m + q6_m
R00045	0.20331	2hpmmbq_m + 0.5 o2_m -> 2hpmhmbq_m
R01208	0.20331	2kmb_c + gluL_c -> akg_c + metL_c
R01172	0.20331	2mahmp_c + 4mpetz_c + h_c -> ppi_c + thmmp_c
R00048	0.20331	2mbald_c <-> 2mbald_m
R00925	0.20331	2mbtoh_c + accoa_c -> 2mbac_c + coa_c
R00050	0.20331	2mbtoh_c <-> 2mbtoh_m
R00052	0.20331	2mppal_c <-> 2mppal_m
R00919	0.20331	2obut_m + coa_m + nad_m -> co2_m + nadh_m + ppcoa_m
R00927	0.20331	2phetoh_c + accoa_c -> coa_c + pheac_c
R00056	0.20331	2phetoh_m <-> 2phetoh_c
R01136	0.20331	34hpl_m -> T4hcinnm_m + h2o_m
R01197	0.20331	34hpp_c + gluL_c -> akg_c + tyrL_c
R00059	0.20331	34hpp_c + h_c <-> 34hpp_m + h_m
R00060	0.20331	34hpp_c + h_c <-> 34hpp_x + h_x
R00058	0.20331	34hpp_c + o2_c -> co2_c + hgentis_c
R01198	0.20331	34hpp_m + gluL_m -> akg_m + tyrL_m
R00057	0.20331	34hpp_m + h_m + nadh_m -> 34hpl_m + nad_m
R01199	0.20331	34hpp_x + gluL_x -> akg_x + tyrL_x

R00950	0.20331	35ccmp_c + h2o_c -> cmp_c + h_c
R00949	0.20331	35cimp_c + h2o_c -> h_c + imp_c
R00069	0.20331	3c2hmp_c + amet_c -> 3ipmmest_c + ahcys_c
R00063	0.20331	3c4mop_c <-> 3c4mop_m
R00930	0.20331	3c4mop_m + h_m -> 4mop_m + co2_m
R00065	0.20331	3dh5hpb_c <-> 3dh5hpb_m
R00064	0.20331	3dh5hpb_m + amet_m -> 3hph5mb_m + ahcys_m + h_m
R00066	0.20331	3dsphgn_c + h_c + nadph_c -> nadp_c + sphgn_c
R00067	0.20331	3hanthrn_c + o2_c -> cmusa_c + h_c
R00435	0.20331	3hdcoa_x <-> dc2coa_x + h2o_x
R00436	0.20331	3hddcoa_x <-> dd2coa_x + h2o_x
R00438	0.20331	3hhdcoa_x <-> hdd2coa_x + h2o_x
R00439	0.20331	3hodcoa_x <-> od2coa_x + h2o_x
R00068	0.20331	3hph5mb_m -> 2hp6mp_m + co2_m
R00437	0.20331	3htdcoa_x <-> td2coa_x + h2o_x
R00678	0.20331	3hxccoa_x + nad_x <-> 3ohxccoa_x + h_x + nadh_x
R00434	0.20331	3hxccoa_x <-> hxc2coa_x + h2o_x
R00071	0.20331	3mbald_c <-> 3mbald_m
R00767	0.20331	3mob_c + accoa_c + h2o_c -> 3c3hmp_c + coa_c + h_c
R00072	0.20331	3mob_c + h_c -> 2mppal_c + co2_c
R00841	0.20331	3mob_c + h2o_c + mlthf_c -> 2dhp_c + thf_c
R00074	0.20331	3mop_c + h_c -> 2mbald_c + co2_c
R00076	0.20331	3mop_c <-> 3mop_m
R00772	0.20331	3oacoa_x + coa_x -> accoa_x + acoa_x
R00105	0.20331	3odcoa_x + coa_x -> accoa_x + c080coa_x
R00679	0.20331	3odcoa_x + h_x + nadh_x <-> 3hdcoa_x + nad_x
R00106	0.20331	3oddcoa_x + coa_x -> accoa_x + c100coa_x
R00680	0.20331	3oddcoa_x + h_x + nadh_x <-> 3hddcoa_x + nad_x
R00108	0.20331	3ohdcoa_x + coa_x -> accoa_x + c140coa_x
R00682	0.20331	3ohdcoa_x + h_x + nadh_x <-> 3hhdcoa_x + nad_x
R00109	0.20331	3ohodcoa_x + coa_x -> accoa_x + c160coa_x
R00683	0.20331	3ohodcoa_x + h_x + nadh_x <-> 3hodcoa_x + nad_x
R00077	0.20331	3ophb_5_c <-> 3ophb_5_m
R00078	0.20331	3ophb_5_m + 0.5 o2_m -> 3dh5hpb_m
R00107	0.20331	3otdcoa_x + coa_x -> accoa_x + c120coa_x
R00681	0.20331	3otdcoa_x + h_x + nadh_x <-> 3htdcoa_x + nad_x
R00292	0.20331	44mctr_c + h_c + nadph_c -> 44mzym_c + nadp_c
R00300	0.20331	44mzym_c + 3 h_c + 3 nadph_c + 3 o2_c -> 4mzym_int1_c + 4 h2o_c + 3 nadp_c
R00095	0.20331	4aabutn_c + h2o_c -> 4abut_c + ac_c
R00100	0.20331	4abut_c + akg_c -> gluL_c + sucsal_c
R00080	0.20331	4abut_c <-> 4abut_m
R00079	0.20331	4abutn_c <-> 4abutn_m
R00102	0.20331	4abutn_m + h2o_m + nad_m -> 4abut_m + 2 h_m + nadh_m
R00082	0.20331	4abz_c <-> 4abz_m
R00081	0.20331	4abz_e -> 4abz_c
R00149	0.20331	4adcho_c -> 4abz_c + h_c + pyr_c
R00716	0.20331	4ahmmp_c + atp_c -> 4ampm_c + adp_c + h_c
R00989	0.20331	4ampm_c + atp_c -> 2mahmp_c + adp_c
R00223	0.20331	4gudbd_c + h2o_c -> 4gudbutn_c + nh4_c
R00083	0.20331	4h2oglt_c <-> 4h2oglt_m
R00084	0.20331	4h2oglt_c <-> 4h2oglt_x
R00087	0.20331	4hbz_c <-> 4hbz_m
R00685	0.20331	4hbz_m + hexdp_m -> 3ophb_5_m + ppi_m
R00086	0.20331	4hbzcoa_m + h2o_m -> 4hbz_m + coa_m + h_m
R00088	0.20331	4hglusa_m + h2o_m + nad_m <-> e4hglu_m + 2 h_m + nadh_m
R00089	0.20331	4hproLT_c <-> 4hproLT_m
R00720	0.20331	4hproLT_m + nad_m -> 1p3h5c_m + 2 h_m + nadh_m
R00721	0.20331	4hproLT_m + nadp_m -> 1p3h5c_m + 2 h_m + nadph_m
R00698	0.20331	4mhetz_c + atp_c -> 4mpetz_c + adp_c + h_c
R00091	0.20331	4mop_c + h_c -> 3mbald_c + co2_c
R00301	0.20331	4mzym_c + 3 h_c + 3 nadph_c + 3 o2_c -> 4 h2o_c + 3 nadp_c + zym_int1_c
R00296	0.20331	4mzym_int1_c + nad_c -> 4mzym_int2_c + co2_c + h_c + nadh_c
R00298	0.20331	4mzym_int2_c + h_c + nadph_c -> 4mzym_c + nadp_c
R01002	0.20331	4ppan_c + ctp_c + cysL_c -> 4ppcys_c + cmp_c + h_c + ppi_c
R00999	0.20331	4ppcys_c + h_c -> co2_c + pan4p_c
R01067	0.20331	4r5au_c + db4p_c -> dmlz_c + 2 h2o_c + pi_c
R00092	0.20331	5aop_c <-> 5aop_m
R00983	0.20331	5aprbu_c + h2o_c -> 4r5au_c + pi_c
R00417	0.20331	5dpmev_c + atp_c -> adp_c + co2_c + ipdp_c + pi_c
R00555	0.20331	5fthf_c + atp_c + h2o_c -> 10fthf_c + adp_c + h_c + pi_c
R00553	0.20331	5fthf_c + atp_c -> adp_c + methf_c + pi_c
R00554	0.20331	5fthf_m + atp_m -> adp_m + methf_m + pi_m
R00849	0.20331	5mdr1p_c <-> 5mdru1p_c
R00814	0.20331	5mdru1p_c -> dkmpp_c + h2o_c
R00842	0.20331	5mta_c + pi_c -> 5mdr1p_c + ade_c
R00984	0.20331	5pmev_c + atp_c -> 5dpmev_c + adp_c
R00007	0.20331	6dg_c + h2o_c -> gal_c + glcD_c
R00093	0.20331	6pgl_c <-> 6pgl_r
R00006	0.20331	8aonn_c + amet_c <-> amob_c + dann_c
R00094	0.20331	8aonn_e + h_e -> 8aonn_c + h_c
R00096	0.20331	aact_c + h2o_c + o2_c -> h2o2_c + mthgxl_c + nh4_c
R00101	0.20331	abt_e -> abt_c
R00146	0.20331	ac_c <-> ac_m
R00147	0.20331	ac_c <-> ac_x
R00145	0.20331	ac_e + h_e -> ac_c + h_c
R00143	0.20331	ac_m + atp_m + coa_m -> accoa_m + amp_m + ppi_m
R00144	0.20331	ac_x + atp_x + coa_x -> accoa_x + amp_x + ppi_x

R00510	0.20331	acACP_m + 9 h_m + 3 malACP_m + 6 nadph_m -> 3 ACP_m + 3 co2_m + 3 h2o_m + 6 nadp_m + c080ACP_m
R01057	0.20331	acald_c + h_c + pyr_c -> actnR_c + co2_c
R00213	0.20331	acald_m + h2o_m + nad_m -> ac_m + 2 h_m + nadh_m
R00215	0.20331	acald_m + h2o_m + nadp_m -> ac_m + 2 h_m + nadph_m
R00112	0.20331	acald_m <-> acald_c
R00345	0.20331	accoa_c + crn_c <-> acrn_c + coa_c
R00923	0.20331	accoa_c + etoh_c -> aces_c + coa_c
R00117	0.20331	accoa_c + gam6p_c <-> acgam6p_c + coa_c + h_c
R00800	0.20331	accoa_c + glx_c + h2o_c -> coa_c + h_c + malL_c
R00924	0.20331	accoa_c + iamoh_c -> coa_c + iamac_c
R00955	0.20331	accoa_c + pepd_c -> apep_c + coa_c + h_c
R01114	0.20331	accoa_c + spmd_c -> N1aspmd_c + coa_c + h_c
R00399	0.20331	accoa_c + sprm_c -> N1sprm_c + coa_c + h_c
R00504	0.20331	accoa_c + 8 h_c + 3 malcoa_c + 6 nadph_c -> 3 co2_c + 4 coa_c + 2 h2o_c + 6 nadp_c + c080_c
R00115	0.20331	accoa_c <-> accoa_n
R00114	0.20331	accoa_m + atp_m + hco3_m <-> adp_m + h_m + malcoa_m + pi_m
R00120	0.20331	accoa_m + gluL_m -> acglu_m + coa_m + h_m
R00126	0.20331	accoa_m + h2o_m -> ac_m + coa_m + h_m
R00687	0.20331	accoa_n + akg_n + h2o_n -> coa_n + h_n + hcit_n
R00344	0.20331	accoa_x + crn_x <-> acrn_x + coa_x
R00801	0.20331	accoa_x + glx_x + h2o_x -> coa_x + h_x + malL_x
R00124	0.20331	aces_c + h2o_c -> ac_c + etoh_c + h_c
R01202	0.20331	acgam1p_c + h_c + utp_c <-> ppi_c + udpacgal_c
R00118	0.20331	acgam6p_c <-> acgam1p_c
R00173	0.20331	achms_c + ch4s_c -> ac_c + h_c + metL_c
R01279	0.20331	achms_c + cysL_c + gly_c + h_c + r5p_c -> 4abut_c + 4mpetz_c + ac_c + co2_c + 3 h2o_c + nh4_c + pyr_c
R01278	0.20331	achms_c + cysL_c + gly_c + h_c + xu5p_c -> 4abut_c + 4mpetz_c + ac_c + co2_c + 3 h2o_c + nh4_c + pyr_c
R00819	0.20331	achms_c + cysL_c -> ac_c + cystL_c + h_c
R00134	0.20331	acon-T_c + amet_c -> acon5m_c + ahcys_c
R00132	0.20331	ACP_c + accoa_c <-> acACP_c + coa_c
R00809	0.20331	ACP_c + malcoa_c <-> coa_c + malACP_c
R00133	0.20331	ACP_m + accoa_m <-> acACP_m + coa_m
R00810	0.20331	ACP_m + malcoa_m <-> coa_m + malACP_m
R00338	0.20331	acrn_c + crn_m -> acrn_m + crn_c
R00140	0.20331	acrn_c -> acrn_m
R00343	0.20331	acrn_m + coa_m <-> accoa_m + crn_m
R00339	0.20331	acrn_x + crn_c -> acrn_c + crn_x
R00141	0.20331	acrn_x -> acrn_c
R00353	0.20331	acser_c + h2s_c -> ac_c + cysL_c + h_c
R00913	0.20331	acybut_c + 2 h2o_c -> gluL_c + nh4_c
R00163	0.20331	ade_c + prpp_c -> amp_c + ppi_c
R00152	0.20331	ade_c <-> ade_m
R00151	0.20331	ade_e + h_e -> ade_c + h_c
R00161	0.20331	adn_c + atp_c -> adp_c + amp_c + h_c
R01038	0.20331	adn_c + pi_c <-> ade_c + r1p_c
R00162	0.20331	adn_e + h_e -> adn_c + h_c
R01039	0.20331	adn_m + pi_m <-> ade_m + r1p_m
R00275	0.20331	adp_c + atp_c + h_c -> ap4a_c + pi_c
R00276	0.20331	adp_c + gtp_c + h_c -> ap4g_c + pi_c
R00867	0.20331	adp_c + h2o_c -> amp_c + h_c + pi_c
R01072	0.20331	adp_c + trdrd_c -> dadp_c + h2o_c + trdox_c
R00282	0.20331	adp_g + 3 h_c + pi_g -> atp_g + 2 h_g + h2o_g
R01073	0.20331	adp_n + trdrd_n -> dadp_n + h2o_n + trdox_n
R00283	0.20331	adp_v + 3 h_c + pi_v -> atp_v + 2 h_v + h2o_v
R00285	0.20331	adp_x + atp_c + h_x -> adp_c + atp_x + h_c
R01281	0.20331	agly3p_c + h_c + nadph_c -> ag3p_c + nadp_c
R00170	0.20331	ahcys_c + h2o_c -> adn_c + hcysL_c
R00171	0.20331	ahcys_c <-> ahcys_m
R00409	0.20331	ahdt_c + h2o_c -> dhpmp_c + h_c + ppi_c
R00182	0.20331	ahdt_c + 3 h2o_c -> dhnpt_c + 2 h_c + 3 pi_c
R00172	0.20331	air_c + 2 h_c -> 4ahmmp_c + gcald_c + pi_c
R00268	0.20331	akg_c + aspL_c <-> gluL_c + oaa_c
R00440	0.20331	akg_c + e4hglu_c -> 4h2oglt_c + gluL_c
R00625	0.20331	akg_c + glnL_c + h_c + nadh_c -> 2 gluL_c + nad_c
R00180	0.20331	akg_c + h_c <-> akg_n + h_n
R00749	0.20331	akg_c + ileL_c <-> 3mop_c + gluL_c
R00179	0.20331	akg_c + malL_e <-> akg_e + malL_c
R01138	0.20331	akg_c + o2_c + taur_c -> aacald_c + co2_c + h_c + so3_c + succ_c
R00935	0.20331	akg_c + orn_c -> gluL_c + glu5sa_c
R01187	0.20331	akg_c + trpL_c <-> gluL_c + indpyr_c
R00181	0.20331	akg_c <-> akg_x
R00186	0.20331	akg_m + alaL_m <-> gluL_m + pyr_m
R00269	0.20331	akg_m + aspL_m <-> gluL_m + oaa_m
R00441	0.20331	akg_m + e4hglu_m -> 4h2oglt_m + gluL_m
R00750	0.20331	akg_m + ileL_m <-> 3mop_m + gluL_m
R00783	0.20331	akg_m + leuL_m <-> 4mop_m + gluL_m
R00939	0.20331	akg_m + oxag_c <-> akg_c + oxag_m
R01225	0.20331	akg_m + valL_m -> 3mob_m + gluL_m
R00270	0.20331	akg_x + aspL_x <-> gluL_x + oaa_x
R00442	0.20331	akg_x + e4hglu_x -> 4h2oglt_x + gluL_x
R00945	0.20331	alaB_c + atp_c + pantR_c -> amp_c + h_c + pntoR_c + ppi_c
R00188	0.20331	alaL_c + atp_c + trnaala_c -> alatrna_c + amp_c + ppi_c
R00169	0.20331	alaL_c + glx_c -> gly_c + pyr_c
R00662	0.20331	alaL_c + gthrd_c -> cgly_c + gluala_c
R00184	0.20331	alaL_e + h_e -> alaL_c + h_c
R00187	0.20331	alaL_m -> alaL_c
R00220	0.20331	allphn_c + 3 h_c + h2o_c -> 2 co2_c + 2 nh4_c

R00217	0.20331	alltn_c + h2o_c <-> alltt_c + h_c
R00218	0.20331	alltn_e -> alltn_c
R00216	0.20331	alltt_c + h2o_c <-> urdglyc_c + urea_c
R00219	0.20331	alltt_e -> alltt_c
R00589	0.20331	alpam_m + thf_m -> dhlam_m + mlthf_m + nh4_m
R00592	0.20331	alpro_m + thf_m -> dhlpro_m + mlthf_m + nh4_m
R00401	0.20331	amet_c + caphis_c -> ahcys_c + cmaphis_c + h_c
R00159	0.20331	amet_c + h_c -> ametam_c + co2_c
R00692	0.20331	amet_c + hcysL_c -> ahcys_c + h_c + metL_c
R00247	0.20331	amet_c + hisL_c -> NPmehis_c + ahcys_c + h_c
R00897	0.20331	amet_c + ncam_c -> 1mncam_c + ahcys_c
R00313	0.20331	amet_c + o2_c + zymst_c -> ahcys_c + ergtetrol_c + h_c + 2 h2o_c
R01252	0.20331	amet_c + pe_c -> ahcys_c + h_c + ptdmeeta_c
R01268	0.20331	amet_c + ptd2meeta_c -> ahcys_c + h_c + pc_c
R01246	0.20331	amet_c + ptdmeeta_c -> ahcys_c + h_c + ptd2meeta_c
R01090	0.20331	amet_c + zymst_c -> ahcys_c + fecost_c + h_c
R00222	0.20331	amet_c <-> amet_m
R00221	0.20331	amet_e + h_e -> amet_c + h_c
R01117	0.20331	ametam_c + ptrc_c -> 5mta_c + h_c + spmd_c
R01118	0.20331	ametam_c + spmd_c -> 5mta_c + h_c + sprm_c
R00153	0.20331	amp_c + atp_c <-> 2 adp_c
R00155	0.20331	amp_c + gtp_c <-> adp_c + gdp_c
R00226	0.20331	amp_c + h_c + h2o_c -> imp_c + nh4_c
R00227	0.20331	amp_c + h2o_c -> ade_c + r5p_c
R00906	0.20331	amp_c + h2o_c -> adn_c + pi_c
R00157	0.20331	amp_c + itp_c <-> adp_c + idp_c
R00154	0.20331	amp_m + atp_m <-> 2 adp_m
R00156	0.20331	amp_m + gtp_m <-> adp_m + gdp_m
R00158	0.20331	amp_m + itp_m <-> adp_m + idp_m
R00228	0.20331	amp_n <-> amp_c
R00274	0.20331	amp_x + atp_c + h_x -> amp_c + atp_x + h_c
R00603	0.20331	amy_c + h2o_c -> glcD_c
R00605	0.20331	amy_c -> amy_v
R00604	0.20331	amy_v + h2o_v -> glcD_v
R00232	0.20331	ap4a_c + h2o_c <-> 2 adp_c + 2 h_c
R00212	0.20331	aproa_c + h2o_c + nad_c -> alaB_c + 2 h_c + nadh_c
R00912	0.20331	aprop_c + 2 h2o_c -> alaL_c + nh4_c
R00233	0.20331	aprut_c + h2o_c + o2_c -> h2o2_c + n4abutn_c + nh4_c
R00235	0.20331	arabD_c + nadp_c -> Dara14lac_c + h_c + nadph_c
R00236	0.20331	arabD_e -> arabD_c
R00238	0.20331	arabL_c + h_c + nadph_c -> abt_c + nadp_c
R00237	0.20331	arabL_e -> arabL_c
R00245	0.20331	argL_c + atp_c + trnaarg_c -> amp_c + argtrna_c + ppi_c
R00242	0.20331	argL_c + h_c <-> argL_m + h_m
R00244	0.20331	argL_c + h_v -> argL_v + h_c
R00239	0.20331	argL_c + h2o_c -> orn_c + urea_c
R00243	0.20331	argL_e + h_e -> argL_c + h_c
R00246	0.20331	argL_m + atp_m + trnaarg_m -> amp_m + argtrna_m + ppi_m
R00256	0.20331	asnL_c + atp_c + trnaasn_c -> amp_c + asntrna_c + ppi_c
R00252	0.20331	asnL_c + h_c <-> asnL_m + h_m
R00254	0.20331	asnL_c + h_v -> asnL_v + h_c
R00249	0.20331	asnL_c + h2o_c -> aspL_c + nh4_c
R00253	0.20331	asnL_e + h_e -> asnL_c + h_c
R00250	0.20331	asnL_e + h2o_e -> aspL_e + nh4_e
R00257	0.20331	asnL_m + atp_m + trnaasn_m -> amp_m + asntrna_m + ppi_m
R00255	0.20331	asnL_v + h_v -> asnL_c + h_c
R00271	0.20331	aspL_c + atp_c + trnaasp_c -> amp_c + asptrna_c + ppi_c
R00262	0.20331	aspL_c + fad_m -> fadh2_m + h_c + iasp_c
R00260	0.20331	aspL_c + gluL_x <-> aspL_x + gluL_c
R00263	0.20331	aspL_c + h_c <-> aspL_m + h_m
R00264	0.20331	aspL_c + h_c <-> aspL_n + h_n
R00265	0.20331	aspL_e + h_e -> aspL_c + h_c
R00272	0.20331	aspL_m + atp_m + trnaasp_m -> amp_m + asptrna_m + ppi_m
R00259	0.20331	aspL_m + gluL_c -> aspL_c + gluL_m
R00266	0.20331	aspL_n <-> aspL_c
R00267	0.20331	aspL_v + h_v -> aspL_c + h_c
R00723	0.20331	aspsa_c + h_c + nadph_c -> homL_c + nadp_c
R00273	0.20331	athrL_c + nadp_c <-> 2aobut_c + h_c + nadph_c
R01153	0.20331	athrL_c -> acald_c + gly_c
R00286	0.20331	atp_c + btn_c + h_c -> btamp_c + ppi_c
R00315	0.20331	atp_c + chol_c -> adp_c + cholp_c + h_c
R00618	0.20331	atp_c + cysL_c + gluL_c -> adp_c + glucys_c + h_c + pi_c
R00358	0.20331	atp_c + cysL_c + trnacys_c -> amp_c + cystrna_c + ppi_c
R00879	0.20331	atp_c + dadp_c <-> adp_c + datp_c
R00366	0.20331	atp_c + damp_c <-> adp_c + dadp_c
R00876	0.20331	atp_c + dgdp_c <-> adp_c + dgtp_c
R00383	0.20331	atp_c + dgmp_c <-> adp_c + dgdp_c
R00387	0.20331	atp_c + dha_c -> adp_c + dhap_c + h_c
R00389	0.20331	atp_c + dhpt_c + gluL_c -> adp_c + dhf_c + h_c + pi_c
R00861	0.20331	atp_c + dnad_c + nh4_c -> amp_c + h_c + nad_c + ppi_c
R00414	0.20331	atp_c + dpcoa_c -> adp_c + coa_c + h_c
R00420	0.20331	atp_c + drib_c -> 2dr5p_c + adp_c + h_c
R00877	0.20331	atp_c + dudp_c <-> adp_c + dutp_c
R00426	0.20331	atp_c + duri_c -> adp_c + dump_c + h_c
R00449	0.20331	atp_c + etha_c -> adp_c + ethamp_c + h_c
R00551	0.20331	atp_c + f1p_c -> adp_c + fdp_c + h_c
R00960	0.20331	atp_c + f6p_c -> adp_c + f26bp_c + h_c

R00957	0.20331	atp_c + f6p_c -> adp_c + fdp_c + h_c
R00540	0.20331	atp_c + fmn_c + h_c -> fad_c + ppi_c
R00556	0.20331	atp_c + for_c + thf_c -> 10fthf_c + adp_c + pi_c
R00701	0.20331	atp_c + fru_c -> adp_c + f6p_c + h_c
R00872	0.20331	atp_c + gdp_c <-> adp_c + gtp_c
R00622	0.20331	atp_c + glcD_c -> adp_c + bg6p_c + h_c
R00699	0.20331	atp_c + glcD_c -> adp_c + g6p_c + h_c
R00350	0.20331	atp_c + glnL_c + h2o_c + utp_c -> adp_c + ctp_c + gluL_c + 2 h_c + pi_c
R00615	0.20331	atp_c + glnL_c + trnagln_c -> amp_c + glntrna_c + ppi_c
R00661	0.20331	atp_c + glucys_c + gly_c -> adp_c + gthrd_c + h_c + pi_c
R01142	0.20331	atp_c + gluL_c + thf_c <-> adp_c + h_c + pi_c + thfglu_c
R00631	0.20331	atp_c + gluL_c + trnaglu_c -> amp_c + glutrna_c + ppi_c
R00646	0.20331	atp_c + gly_c + trnagly_c -> amp_c + glytrna_c + ppi_c
R00641	0.20331	atp_c + glyc_c -> adp_c + glyc3p_c + h_c
R00601	0.20331	atp_c + gmp_c <-> adp_c + gdp_c
R00651	0.20331	atp_c + gsn_c -> adp_c + gmp_c + h_c
R00895	0.20331	atp_c + h_c + nicrnt_c -> dnad_c + ppi_c
R00888	0.20331	atp_c + h_c + nmn_c -> nad_c + ppi_c
R01034	0.20331	atp_c + h_c + pan4p_c -> dpcoa_c + ppi_c
R01089	0.20331	atp_c + h_c + so4_c -> aps_c + ppi_c
R00818	0.20331	atp_c + h2o_c + metL_c -> amet_c + pi_c + ppi_c
R00279	0.20331	atp_c + h2o_c -> adp_c + h_c + pi_c
R00281	0.20331	atp_c + h2o_c -> adp_c + h_e + pi_c
R01215	0.20331	atp_c + hco3_c + urea_c <-> adp_c + allphn_c + h_c + pi_c
R00710	0.20331	atp_c + hisL_c + trnahis_c -> amp_c + histrna_c + ppi_c
R00880	0.20331	atp_c + idp_c <-> adp_c + itp_c
R00752	0.20331	atp_c + ileL_c + trnaile_c -> amp_c + iletrna_c + ppi_c
R00759	0.20331	atp_c + ins_c -> adp_c + h_c + imp_c
R00784	0.20331	atp_c + leuL_c + trnaleu_c -> amp_c + leutrna_c + ppi_c
R00796	0.20331	atp_c + lysL_c + trnalys_c -> amp_c + lystrna_c + ppi_c
R00700	0.20331	atp_c + man_c -> adp_c + h_c + man6p_c
R00823	0.20331	atp_c + metL_c + trnamet_c -> amp_c + mettrna_c + ppi_c
R00825	0.20331	atp_c + mevR_c -> 5pmev_c + adp_c + h_c
R00988	0.20331	atp_c + mi13456p_c -> adp_c + ppmi1346p_c
R00986	0.20331	atp_c + minohp_c -> adp_c + ppmi12346p_c
R00854	0.20331	atp_c + nad_c -> adp_c + h_c + nadp_c
R01000	0.20331	atp_c + oaa_c -> adp_c + co2_c + pep_c
R01247	0.20331	atp_c + pa_c -> adp_c + dagpy_c
R00974	0.20331	atp_c + pheL_c + trnaphe_c -> amp_c + phetrna_c + ppi_c
R00991	0.20331	atp_c + pntoR_c -> 4ppan_c + adp_c + h_c
R01019	0.20331	atp_c + proL_c + trnapro_c -> amp_c + ppi_c + protrna_c
R01108	0.20331	atp_c + psphings_c -> adp_c + h_c + psph1p_c
R01260	0.20331	atp_c + ptd1ino_c -> adp_c + h_c + ptd3ino_c
R01261	0.20331	atp_c + ptd1ino_c -> adp_c + h_c + ptd4ino_c
R01255	0.20331	atp_c + ptd3ino_c -> adp_c + h_c + ptd134bp_c
R01256	0.20331	atp_c + ptd3ino_c -> adp_c + h_c + ptd135bp_c
R01259	0.20331	atp_c + ptd4ino_c -> adp_c + h_c + ptd145bp_c
R01048	0.20331	atp_c + pydam_c -> adp_c + h_c + pyam5p_c
R01049	0.20331	atp_c + pydx_c -> adp_c + h_c + pydx5p_c
R01050	0.20331	atp_c + pydxn_c -> adp_c + h_c + pdx5p_c
R01069	0.20331	atp_c + ribD_c -> adp_c + h_c + r5p_c
R01065	0.20331	atp_c + ribflv_c -> adp_c + fmn_c + h_c
R01080	0.20331	atp_c + rnam_c -> adp_c + h_c + nmn_c
R00959	0.20331	atp_c + s7p_c -> adp_c + h_c + s17bp_c
R01100	0.20331	atp_c + serL_c + trnaser_c -> amp_c + ppi_c + sertrna_c
R01107	0.20331	atp_c + sphgn_c -> adp_c + h_c + sph1p_c
R00958	0.20331	atp_c + tag6pD_c -> adp_c + h_c + tagdpD_c
R01166	0.20331	atp_c + thm_c -> amp_c + h_c + thmpp_c
R01171	0.20331	atp_c + thmmp_c <-> adp_c + thmpp_c
R01168	0.20331	atp_c + thmpp_c -> adp_c + thmtp_c
R01160	0.20331	atp_c + thrL_c + trnathr_c -> amp_c + ppi_c + thrtrna_c
R01165	0.20331	atp_c + thymd_c -> adp_c + dtmp_c + h_c
R01081	0.20331	atp_c + trdrd_c -> datp_c + h2o_c + trdox_c
R01188	0.20331	atp_c + trnatrp_c + trpL_c -> amp_c + ppi_c + trptrna_c
R01200	0.20331	atp_c + trnatyr_c + tyrL_c -> amp_c + ppi_c + tyrtrna_c
R01226	0.20331	atp_c + trnaval_c + valL_c -> amp_c + ppi_c + valtrna_c
R01218	0.20331	atp_c + uri_c -> adp_c + h_c + ump_c
R01231	0.20331	atp_c + xyluD_c -> adp_c + h_c + xu5p_c
R00278	0.20331	atp_c + 2 h2o_c -> amp_c + 2 h_c + 2 pi_c
R00160	0.20331	atp_c -> camp_c + ppi_c
R00769	0.20331	atp_m + coa_m + itacon_m <-> adp_m + itaccoa_m + pi_m
R00415	0.20331	atp_m + dpcoa_m -> adp_m + coa_m + h_m
R00541	0.20331	atp_m + fmn_m + h_m -> fad_m + ppi_m
R00557	0.20331	atp_m + for_m + thf_m -> 10fthf_m + adp_m + pi_m
R00632	0.20331	atp_m + gluL_m + trnaglu_m -> amp_m + glutrna_m + ppi_m
R00896	0.20331	atp_m + h_m + nicrnt_m -> dnad_m + ppi_m
R00889	0.20331	atp_m + h_m + nmn_m -> nad_m + ppi_m
R01035	0.20331	atp_m + h_m + pan4p_m -> dpcoa_m + ppi_m
R00711	0.20331	atp_m + hisL_m + trnahis_m -> amp_m + histrna_m + ppi_m
R00753	0.20331	atp_m + ileL_m + trnaile_m -> amp_m + iletrna_m + ppi_m
R00785	0.20331	atp_m + leuL_m + trnaleu_m -> amp_m + leutrna_m + ppi_m
R00797	0.20331	atp_m + lysL_m + trnalys_m -> amp_m + lystrna_m + ppi_m
R00824	0.20331	atp_m + metL_m + trnamet_m -> amp_m + mettrna_m + ppi_m
R00855	0.20331	atp_m + nad_m -> adp_m + h_m + nadp_m
R00975	0.20331	atp_m + pheL_m + trnaphe_m -> amp_m + phetrna_m + ppi_m
R01066	0.20331	atp_m + ribflv_m -> adp_m + fmn_m + h_m
R01161	0.20331	atp_m + thrL_m + trnathr_m -> amp_m + ppi_m + thrtrna_m

R01189 0.20331 atp_m + trnatrp_m + trpL_m -> amp_m + ppi_m + trptrna_m
R01201 0.20331 atp_m + trnatyr_m + tyrL_m -> amp_m + ppi_m + tyrtrna_m
R01227 0.20331 atp_m + trnaval_m + valL_m -> amp_m + ppi_m + valtrna_m
R00862 0.20331 atp_n + dnad_n + nh4_n -> amp_n + h_n + nad_n + ppi_n
R01217 0.20331 atp_n + dump_n <-> adp_n + dudp_n
R00831 0.20331 atp_n + mi13456p_n -> adp_n + h_n + minohp_n
R00832 0.20331 atp_n + mi1345p_n -> adp_n + h_n + mi13456p_n
R00833 0.20331 atp_n + mi1456p_n -> adp_n + h_n + mi13456p_n
R00835 0.20331 atp_n + mi145p_n -> adp_n + h_n + mi1345p_n
R00834 0.20331 atp_n + mi145p_n -> adp_n + h_n + mi1456p_n
R01262 0.20331 atp_n + ptd1ino_n -> adp_n + h_n + ptd4ino_n
R01206 0.20331 atp_n + ump_n <-> adp_n + udp_n
R00659 0.20331 atp_v + gthrd_c + h2o_v -> adp_v + gthrd_v + h_v + pi_v
R01140 0.20331 atp_v + h2o_v + tchola_c -> adp_v + h_v + pi_v + tchola_v
R00579 0.20331 bg6p_c <-> f6p_c
R00288 0.20331 btdRR_c + nad_c <-> actnR_c + h_c + nadh_c
R00290 0.20331 btn_e + h_e -> btn_c + h_c
R00505 0.20331 c080_c + 3 h_c + malcoa_c + 2 nadph_c -> co2_c + coa_c + h2o_c + 2 nadp_c + c100_c
R00459 0.20331 c080_c -> c080_x
R00481 0.20331 c080_x + atp_x + coa_x <-> c080coa_x + amp_x + ppi_x
R00511 0.20331 c080ACP_m + 3 h_m + malACP_m + 2 nadph_m -> ACP_m + co2_m + 3 h2o_m + 2 nadp_m + c100ACP_m
R00503 0.20331 c080coa_x + 3 coa_x + 3 h2o_x + 3 nad_x + 3 o2_x -> 4 accoa_x + 3 h_x + 3 h2o2_x + 3 nadh_x
R00453 0.20331 c100_c -> c100_x
R00482 0.20331 c100_x + atp_x + coa_x <-> c100coa_x + amp_x + ppi_x
R00512 0.20331 c100ACP_m + 3 h_m + malACP_m + 2 nadph_m -> ACP_m + co2_m + 3 h2o_m + 2 nadp_m + c120ACP_m
R01028 0.20331 c100coa_x + h2o_x -> coa_x + h_x + c100_x
R00127 0.20331 c100coa_x + o2_x -> h2o2_x + dc2coa_x
R00454 0.20331 c120_c -> c120_x
R00483 0.20331 c120_x + atp_x + coa_x <-> c120coa_x + amp_x + ppi_x
R00467 0.20331 c120ACP_c + h2o_c <-> ACP_c + h_c + c120_c
R00513 0.20331 c120ACP_m + 3 h_m + malACP_m + 2 nadph_m -> ACP_m + co2_m + 3 h2o_m + 2 nadp_m + c140ACP_m
R00514 0.20331 c120ACP_m + 4 h_m + malACP_m + 3 nadph_m + o2_m -> ACP_m + co2_m + 4 h2o_m + 3 nadp_m + c141ACP_m
R00460 0.20331 c120ACP_m -> c120ACP_c
R01029 0.20331 c120coa_x + h2o_x -> coa_x + h_x + c120_x
R00128 0.20331 c120coa_x + o2_x -> h2o2_x + dd2coa_x
R00488 0.20331 c140_c + atp_c + coa_c <-> c140coa_c + amp_c + ppi_c
R00508 0.20331 c140_c + 3 h_c + malcoa_c + 2 nadph_c -> co2_c + coa_c + h2o_c + 2 nadp_c + c160_c
R00455 0.20331 c140_c -> c140_x
R01190 0.20331 c140_e <-> c140_c
R00484 0.20331 c140_x + atp_x + coa_x <-> c140coa_x + amp_x + ppi_x
R00468 0.20331 c140ACP_c + h2o_c <-> ACP_c + h_c + c140_c
R00515 0.20331 c140ACP_m + 3 h_m + malACP_m + 2 nadph_m -> ACP_m + co2_m + 3 h2o_m + 2 nadp_m + c160ACP_m
R00516 0.20331 c140ACP_m + 4 h_m + malACP_m + 3 nadph_m + o2_m -> ACP_m + co2_m + 4 h2o_m + 3 nadp_m + c161ACP_m
R00461 0.20331 c140ACP_m -> c140ACP_c
R00475 0.20331 c140coa_c + atp_x + h2o_x -> adp_x + h_x + pi_x + c140coa_x
R00524 0.20331 c140coa_c + 3 h_c + malcoa_c + 2 nadph_c -> co2_c + coa_c + h2o_c + 2 nadp_c + c160coa_c
R00129 0.20331 c140coa_x + o2_x -> h2o2_x + td2coa_x
R00489 0.20331 c141_c + atp_c + coa_c <-> c141coa_c + amp_c + ppi_c
R00456 0.20331 c141_c -> c141_x
R00485 0.20331 c141_x + atp_x + coa_x <-> c141coa_x + amp_x + ppi_x
R00469 0.20331 c141ACP_c + h2o_c <-> ACP_c + h_c + c141_c
R00462 0.20331 c141ACP_m -> c141ACP_c
R00476 0.20331 c141coa_c + atp_x + h2o_x -> adp_x + h_x + pi_x + c141coa_x
R00497 0.20331 c141coa_x + 6 coa_x + 6 h2o_x + 6 nad_x + nadph_x + 6 o2_x -> 7 accoa_x + 5 h_x + 6 h2o2_x + 6 nadh_x + nadp_x
R00498 0.20331 c141coa_x + 6 coa_x + 6 h2o_x + 6 nad_x + 5 o2_x -> 7 accoa_x + 6 h_x + 5 h2o2_x + 6 nadh_x
R00509 0.20331 c160_c + 3 h_c + malcoa_c + 2 nadph_c -> co2_c + coa_c + h2o_c + 2 nadp_c + c180_c
R00457 0.20331 c160_c -> c160_x
R00694 0.20331 c160_e <-> c160_c
R00486 0.20331 c160_x + atp_x + coa_x <-> c160coa_x + amp_x + ppi_x
R00470 0.20331 c160ACP_c + h2o_c <-> ACP_c + h_c + c160_c
R00517 0.20331 c160ACP_m + 3 h_m + malACP_m + 2 nadph_m -> ACP_m + co2_m + 3 h2o_m + 2 nadp_m + c180ACP_m
R00518 0.20331 c160ACP_m + 4 h_m + malACP_m + 3 nadph_m + o2_m -> ACP_m + co2_m + 4 h2o_m + 3 nadp_m + c181ACP_m
R00519 0.20331 c160ACP_m + 5 h_m + malACP_m + 4 nadph_m + 2 o2_m -> ACP_m + co2_m + 5 h2o_m + 4 nadp_m + c182ACP_m
R00463 0.20331 c160ACP_m -> c160ACP_c
R00477 0.20331 c160coa_c + atp_x + h2o_x -> adp_x + h_x + pi_x + c160coa_x
R01097 0.20331 c160coa_c + h_c + serL_c -> 3dsphgn_c + co2_c + coa_c
R00525 0.20331 c160coa_c + 3 h_c + malcoa_c + 2 nadph_c -> co2_c + coa_c + h2o_c + 2 nadp_c + c180coa_c
R01030 0.20331 c160coa_x + h2o_x -> coa_x + h_x + c160_x
R00130 0.20331 c160coa_x + o2_x -> h2o2_x + hdd2coa_x
R00458 0.20331 c161_c -> c161_x
R00695 0.20331 c161_e <-> c161_c
R00487 0.20331 c161_x + atp_x + coa_x <-> c161coa_x + amp_x + ppi_x
R00471 0.20331 c161ACP_c + h2o_c <-> ACP_c + h_c + c161_c
R00464 0.20331 c161ACP_m -> c161ACP_c
R00478 0.20331 c161coa_c + atp_x + h2o_x -> adp_x + h_x + pi_x + c161coa_x
R00499 0.20331 c161coa_x + 7 coa_x + 7 h2o_x + 7 nad_x + nadph_x + 7 o2_x -> 8 accoa_x + 6 h_x + 7 h2o2_x + 7 nadh_x + nadp_x
R00500 0.20331 c161coa_x + 7 coa_x + 7 h2o_x + 7 nad_x + 6 o2_x -> 8 accoa_x + 7 h_x + 6 h2o2_x + 7 nadh_x
R00921 0.20331 c180_e <-> c180_c
R00472 0.20331 c180ACP_c + h2o_c <-> ACP_c + h_c + c180_c
R00465 0.20331 c180ACP_m -> c180ACP_c
R00479 0.20331 c180coa_c + atp_x + h2o_x -> adp_x + h_x + pi_x + c180coa_x
R00131 0.20331 c180coa_x + o2_x -> h2o2_x + od2coa_x
R00922 0.20331 c181_e <-> c181_c
R00473 0.20331 c181ACP_c + h2o_c <-> ACP_c + h_c + c181_c
R00466 0.20331 c181ACP_m -> c181ACP_c
R00480 0.20331 c181coa_c + atp_x + h2o_x -> adp_x + h_x + pi_x + c181coa_x
R00501 0.20331 c181coa_x + 8 coa_x + 8 h2o_x + 8 nad_x + nadph_x + 8 o2_x -> 9 accoa_x + 7 h_x + 8 h2o2_x + 8 nadh_x + nadp_x

R00502	0.20331	c181coa_x + 8 coa_x + 8 h2o_x + 8 nad_x + 7 o2_x -> 9 accoa_x + 8 h_x + 7 h2o2_x + 8 nadh_x
R00494	0.20331	c182_c + atp_c + coa_c <-> c182coa_c + amp_c + ppi_c
R00474	0.20331	c182ACP_c + h2o_c <-> ACP_c + h_c + c182_c
R00306	0.20331	cbasp_n <-> cbasp_c
R00309	0.20331	cbp_c <-> cbp_n
R01076	0.20331	cdp_c + trdrd_c -> dcdp_c + h2o_c + trdox_c
R00311	0.20331	cdp_c <-> cdp_n
R01077	0.20331	cdp_n + trdrd_n -> dcdp_n + h2o_n + trdox_n
R01235	0.20331	cdpdag_m + glyc3p_m <-> cmp_m + h_m + pgp_m
R01236	0.20331	cdpdag_m + pg_m -> clpn_m + cmp_m + h_m
R01272	0.20331	cdpdag_m + serL_m <-> cmp_m + h_m + ps_m
R00319	0.20331	chitin_c + h2o_c -> ac_c + chitos_c + h_c
R00314	0.20331	chol_e + h_e -> chol_c + h_c
R00312	0.20331	cholp_c + ctp_c + h_c -> cdpchol_c + ppi_c
R00150	0.20331	chor_c + glnL_c -> 4adcho_c + gluL_c
R00318	0.20331	chor_c -> 4hbz_c + pyr_c
R00324	0.20331	cit_c + icit_m <-> cit_m + icit_c
R00325	0.20331	cit_c + icit_x <-> cit_x + icit_c
R00323	0.20331	cit_c + pep_m <-> cit_m + pep_c
R00135	0.20331	cit_c <-> icit_c
R00137	0.20331	cit_m <-> icit_m
R00322	0.20331	cit_x + malL_c <-> cit_c + malL_x
R00326	0.20331	cmp_c + h2o_c -> csn_c + r5p_c
R00903	0.20331	cmp_c + h2o_c -> cytd_c + pi_c
R00351	0.20331	cmp_m + ctp_c + 2 h_c -> cmp_c + ctp_m + 2 h_m
R01062	0.20331	cmusa_c -> h_c + h2o_c + quln_c
R00688	0.20331	co2_c + h2o_c <-> h_c + hco3_c
R00328	0.20331	co2_c <-> co2_g
R00332	0.20331	co2_c <-> co2_v
R00331	0.20331	co2_c <-> co2_x
R00689	0.20331	co2_m + h2o_m <-> h_m + hco3_m
R00690	0.20331	co2_n + h2o_n <-> h_n + hco3_n
R00330	0.20331	co2_n <-> co2_c
R00713	0.20331	coa_c + h_c + hmgcoa_c <-> aacoa_c + accoa_c + h2o_c
R00712	0.20331	coa_c + mevR_c + 2 nadp_c <-> 2 h_c + hmgcoa_c + 2 nadph_c
R00335	0.20331	coa_c <-> coa_n
R00334	0.20331	coa_c -> coa_m
R00085	0.20331	coa_m + coucoa_m + h2o_m + nad_m -> 4hbzcoa_m + accoa_m + h_m + nadh_m
R00714	0.20331	coa_m + h_m + hmgcoa_m <-> aacoa_m + accoa_m + h2o_m
R00005	0.20331	coa_m + h2o_m -> 2 h_m + pan4p_m + pap_m
R00333	0.20331	coa_x + h2o_x -> 2 h_x + pan4p_x + pap_x
R00337	0.20331	cpppg3_c + 2 h_c + o2_c -> 2 co2_c + 2 h2o_c + pppg9_c
R00341	0.20331	crn_c -> crn_x
R00026	0.20331	crn_e -> crn_c
R00340	0.20331	crn_m -> crn_c
R00346	0.20331	csn_c + h_c + h2o_c -> nh4_c + ura_c
R00347	0.20331	csn_e + h_e -> csn_c + h_c
R00410	0.20331	ctp_c + dolichol_c -> cdp_c + dolp_c + h_c
R00956	0.20331	ctp_c + ethamp_c + h_c -> cdpea_c + ppi_c
R00826	0.20331	ctp_c + mevR_c -> 5pmev_c + cdp_c + h_c
R01083	0.20331	ctp_c + trdrd_c -> dctp_c + h2o_c + trdox_c
R01240	0.20331	ctp_m + h_m + pa_m <-> cdpdag_m + ppi_m
R01106	0.20331	cysL_c + suchms_c -> cystL_c + h_c + succ_c
R00354	0.20331	cysL_e + h_e -> cysL_c + h_c
R00356	0.20331	cystL_c + h2o_c -> hcysL_c + nh4_c + pyr_c
R00360	0.20331	cystL_c <-> cystL_x
R00357	0.20331	cystL_x + h2o_x -> hcysL_x + nh4_x + pyr_x
R00362	0.20331	cytd_c + gtp_c -> cmp_c + gdp_c + h_c
R00361	0.20331	cytd_c + h_c + h2o_c -> nh4_c + uri_c
R00363	0.20331	cytd_e + h_e -> cytd_c + h_c
R01040	0.20331	dad2_c + pi_c <-> 2dr1p_c + ade_c
R00367	0.20331	dad2_e + h_e -> dad2_c + h_c
R00368	0.20331	dadp_c <-> dadp_n
R01245	0.20331	dagpy_c + h2o_c -> h_c + pa_c + pi_c
R00905	0.20331	damp_c + h2o_c -> dad2_c + pi_c
R00369	0.20331	dann_e + h_e -> dann_c + h_c
R00234	0.20331	Dara14lac_c + o2_c <-> ertascbD_c + h2o2_c
R00602	0.20331	datp_c + gmp_c <-> dadp_c + gdp_c
R00371	0.20331	dcdp_c <-> dcdp_n
R00902	0.20331	dcmp_c + h2o_c -> dcyt_c + pi_c
R00373	0.20331	dctp_c + h_c + h2o_c -> dutp_c + nh4_c
R00374	0.20331	dcyt_c + h_c + h2o_c -> duri_c + nh4_c
R00375	0.20331	dcyt_e + h_e -> dcyt_c + h_c
R00870	0.20331	dgdp_c + h2o_c -> dgmp_c + h_c + pi_c
R00382	0.20331	dgdp_c <-> dgdp_n
R00907	0.20331	dgmp_c + h2o_c -> dgsn_c + pi_c
R01237	0.20331	dgr_c + cdpchol_c -> cmp_c + h_c + pc_c
R01243	0.20331	dgr_c + cdpea_c <-> cmp_c + h_c + pe_c
R01306	0.20331	dgr_c + atp_c -> pa_c + adp_c
R01043	0.20331	dgsn_c + pi_c <-> 2dr1p_c + gua_c
R00384	0.20331	dgsn_e + h_e -> dgsn_c + h_c
R00910	0.20331	dgtp_c + h2o_c -> dgdp_c + h_c + pi_c
R01296	0.20331	dha_x -> dha_c
R01063	0.20331	dhap_c + iasp_c -> 2 h2o_c + pi_c + quln_c
R01291	0.20331	dhap_c + 0.313 c160coa_c + 0.09 c161coa_c + 0.039 c180coa_c + 0.559 c181coa_c + 0.458 c182coa_c -> agly3p_c + coa_c
R00829	0.20331	dhap_c -> mthgxl_c + pi_c
R00568	0.20331	dhap_m + h_m + nadh_m -> glyc3p_m + nad_m

R00388	0.20331	dhap_m -> dhap_c
R00390	0.20331	dhf_c <-> dhf_m
R00008	0.20331	dhf_m + h_m + nadph_m -> nadp_m + thf_m
R00590	0.20331	dhlam_m + nad_m <-> h_m + lpam_m + nadh_m
R00951	0.20331	dhlam_m + nad_m -> h_m + lpam_m + nadh_m
R00593	0.20331	dhlpro_m + nad_m <-> h_m + lpro_m + nadh_m
R00392	0.20331	dhnpt_c <-> dhnpt_m
R00391	0.20331	dhnpt_m -> 2ahhmp_m + gcald_m + h_m
R00393	0.20331	dhorS_c + fum_c -> orot_c + succ_c
R00016	0.20331	dhorS_c + o2_c -> h2o2_c + orot_c
R00017	0.20331	dhorS_c + q6_m -> orot_c + q6h2_m
R00396	0.20331	dhpt_c <-> dhpt_m
R01045	0.20331	din_c + pi_c <-> 2dr1p_c + hxan_c
R00400	0.20331	din_e + h_e -> din_c + h_c
R00402	0.20331	dkmpp_c + 3 h2o_c -> 2kmb_c + for_c + 6 h_c + pi_c
R00408	0.20331	dmpp_c + ipdp_c -> grdp_c + ppi_c
R00411	0.20331	dolmanp_r -> dolp_r + h_r + mannan_r
R00412	0.20331	dolp_c + gdpmann_c -> dolmanp_r + gdp_c
R00413	0.20331	dolp_c + h_c <-> dolp_r + h_r
R01102	0.20331	dscl_c + nadp_c -> h_c + nadph_c + scl_c
R00291	0.20331	dtbt_c + s_c <-> btn_c + 2 h_c
R00904	0.20331	dtmp_c + h2o_c -> pi_c + thymd_c
R00424	0.20331	dttp_e -> dttp_c
R00898	0.20331	dump_c + h2o_c -> duri_c + pi_c
R00425	0.20331	dump_c <-> dump_n
R00427	0.20331	duri_c + pi_c <-> 2dr1p_c + ura_c
R00428	0.20331	duri_e + h_e -> duri_c + h_c
R00429	0.20331	dutp_c + h2o_c -> dump_c + h_c + ppi_c
R00431	0.20331	e4hglu_c <-> e4hglu_m
R00432	0.20331	e4hglu_c <-> e4hglu_x
R00376	0.20331	e4p_c + h2o_c + pep_c -> 2dda7p_c + pi_c
R00433	0.20331	e4p_c <-> e4p_m
R00377	0.20331	e4p_m + h2o_m + pep_m -> 2dda7p_m + pi_m
R00302	0.20331	epist_c + h_c + nadph_c + o2_c -> ergtrol_c + 2 h2o_c + nadp_c
R00445	0.20331	ergst_c + udpg_c -> ergst3glc_c + h_c + udp_c
R00446	0.20331	ergst_e -> ergst_c
R00447	0.20331	ergst_r <-> ergst_c
R00448	0.20331	ergtetrol_c <-> ergtetrol_r
R00295	0.20331	ergtetrol_r + h_r + nadph_r -> ergst_r + nadp_r
R00294	0.20331	ergtrol_c + h_c + nadh_c + o2_c -> ergtetrol_c + 2 h2o_c + nad_c
R00293	0.20331	ergtrol_c + h_c + nadph_c + o2_c -> ergtetrol_c + 2 h2o_c + nadp_c
R00450	0.20331	etha_e -> etha_c
R00207	0.20331	etoh_c + nad_c <-> acald_c + h_c + nadh_c
R00452	0.20331	etoh_c <-> etoh_m
R00451	0.20331	etoh_e <-> etoh_c
R00527	0.20331	f1p_c <-> dhap_c + glyald_c
R00530	0.20331	f26bp_c + h2o_c -> f6p_c + pi_c
R00597	0.20331	f6p_c + glnL_c -> gam6p_c + gluL_c
R00495	0.20331	fad_c + fmn_m -> fad_m + fmn_c
R00569	0.20331	fad_m + glyc3p_m -> dhap_m + fadh2_m
R01129	0.20331	fad_m + succ_m <-> fadh2_m + fum_m
R00547	0.20331	fadh2_m + fum_c -> fad_m + succ_c
R00548	0.20331	fadh2_m + fum_m -> fad_m + succ_m
R01131	0.20331	fadh2_m + q6_m <-> fad_m + q6h2_m
R00496	0.20331	fald_c + gthrd_c + nad_c <-> Sfglutth_c + h_c + nadh_c
R01294	0.20331	fald_x + xu5p_x -> g3p_x + dha_x
R01298	0.20331	fald_x -> fald_c
R00529	0.20331	fdp_c + h2o_c -> f6p_c + pi_c
R00526	0.20331	fdp_c <-> dhap_c + g3p_c
R01103	0.20331	fe2_c + scl_c -> 3 h_c + sheme_c
R00535	0.20331	fe2_c -> fe2_m
R00534	0.20331	fe2_e -> fe2_c
R00531	0.20331	fe2_m + ppp9_m -> 2 h_m + pheme_m
R00537	0.20331	fe2_m -> fe2_c
R00303	0.20331	fecost_c -> epist_c
R00536	0.20331	fecost_e -> fecost_c
R00542	0.20331	fmn_c + h_c + nadh_c -> fmnh2_c + nad_c
R00543	0.20331	fmn_c + h_c + nadph_c -> fmnh2_c + nadp_c
R00139	0.20331	fmn_e + h2o_e -> pi_e + ribflv_e
R00533	0.20331	for_c + h_c + q6_m -> co2_c + q6h2_m
R00532	0.20331	for_c + nad_c -> co2_c + nadh_c
R00545	0.20331	for_e -> for_c
R00546	0.20331	for_m -> for_c
R00550	0.20331	frdp_c + ipdp_c -> ggdp_c + ppi_c
R00549	0.20331	frdp_c <-> frdp_m
R00697	0.20331	frdp_m + h2o_m + pheme_m -> hemeO_m + ppi_m
R00552	0.20331	fru_e + h_e -> fru_c + h_c
R00558	0.20331	fum_c + h2o_c <-> malL_c
R00561	0.20331	fum_e + h_e -> fum_c + h_c
R01132	0.20331	fum_m + succ_c -> fum_c + succ_m
R01137	0.20331	g3p_c + s7p_c <-> e4p_c + f6p_c
R01295	0.20331	g3p_x -> g3p_c
R00649	0.20331	g3pc_c + h2o_c -> chol_c + glyc3p_c + h_c
R00566	0.20331	g3pc_e -> g3pc_c
R00570	0.20331	g3pi_e -> g3pi_c
R01178	0.20331	g6p_c + udpg_c -> h_c + tre6p_c + udp_c
R00578	0.20331	g6p_c <-> bg6p_c

R00963	0.20331	g6p_c <-> f6p_c
R00580	0.20331	g6p_c <-> g6p_r
R00577	0.20331	g6p_r + nadp_r -> 6pgl_r + h_r + nadph_r
R00581	0.20331	gal_e + h_e -> gal_c + h_c
R00961	0.20331	gam1p_c <-> gam6p_c
R00575	0.20331	gam6p_c + h2o_c -> f6p_c + nh4_c
R00583	0.20331	gam6p_e -> gam6p_c
R00587	0.20331	gcald_c <-> gcald_m
R00586	0.20331	gcald_e -> gcald_c
R00277	0.20331	gdp_c + gtp_c + h_c -> gp4g_c + pi_c
R00868	0.20331	gdp_c + h2o_c -> gmp_c + h_c + pi_c
R01074	0.20331	gdp_c + trdrd_c -> dgdp_c + h2o_c + trdox_c
R00596	0.20331	gdp_c <-> gdp_n
R00595	0.20331	gdp_g + h_c <-> gdp_c + h_g
R00869	0.20331	gdp_g + h2o_g -> gmp_g + h_g + pi_g
R00666	0.20331	gdp_m + gtp_c + h_c -> gdp_c + gtp_m + h_m
R01075	0.20331	gdp_n + trdrd_n -> dgdp_n + h2o_n + trdox_n
R00594	0.20331	gdpmann_c + gmp_g -> gdpmann_g + gmp_c
R00565	0.20331	gdpmann_g + m1macchitppdol_g -> gdp_g + h_g + m2macchitppdol_g
R00562	0.20331	gdpmann_g + m2macchitppdol_g -> gdp_g + h_g + m3macchitppdol_g
R00563	0.20331	gdpmann_g + m3macchitppdol_g -> gdp_g + h_g + m4macchitppdol_g
R00564	0.20331	gdpmann_g + macchitppdol_g -> gdp_g + h_g + m1macchitppdol_g
R00598	0.20331	ggdp_c + ipdp_c -> pendp_c + ppi_c
R00609	0.20331	glcD_c <-> glcD_v
R00611	0.20331	glnL_c + h_c <-> glnL_n + h_n
R00613	0.20331	glnL_c + h_v -> glnL_v + h_c
R00612	0.20331	glnL_e + h_e -> glnL_c + h_c
R00614	0.20331	glnL_v + h_v -> glnL_c + h_c
R00616	0.20331	glp_c + c140coa_c -> coa_c + tglp_c
R00573	0.20331	glu5p_c + h_c + nadph_c -> glu5sa_c + nadp_c + pi_c
R01055	0.20331	glu5sa_m + h2o_m + nadp_m -> gluL_m + 2 h_m + nadph_m
R00572	0.20331	glu5sa_m <-> 1pyr5c_m + h_m + h2o_m
R00626	0.20331	gluL_c + h_c <-> gluL_n + h_n
R00619	0.20331	gluL_c + h_c -> 4abut_c + co2_c
R00620	0.20331	gluL_c + h2o_c + nad_c -> akg_c + h_c + nadh_c + nh4_c
R00628	0.20331	gluL_c + oh1_m -> gluL_m + oh1_c
R00928	0.20331	gluL_c + ohpb_c <-> akg_c + phthr_c
R00627	0.20331	gluL_e + h_e -> gluL_c + h_c
R00629	0.20331	gluL_v + h_v -> gluL_c + h_c
R00634	0.20331	glx_c <-> glx_x
R00633	0.20331	glx_e -> glx_c
R00645	0.20331	gly_e + h_e -> gly_c + h_c
R00588	0.20331	gly_m + h_m + lpam_m <-> alpam_m + co2_m
R00591	0.20331	gly_m + h_m + lpro_m <-> alpro_m + co2_m
R00183	0.20331	gly_m + h_m + succoa_m -> 5aop_m + co2_m + coa_m
R00638	0.20331	gly_m + nad_m + thf_m -> co2_m + mlthf_m + nadh_m + nh4_m
R00189	0.20331	glyald_c + h_c + nadph_c -> glyc_c + nadp_c
R00637	0.20331	glyc_c + nadp_c -> dha_c + h_c + nadph_c
R00639	0.20331	glyc_e + h_e -> glyc_c + h_c
R00025	0.20331	glyc_e -> glyc_c
R00636	0.20331	glyc3p_c -> glyc3p_m
R00908	0.20331	gmp_c + h2o_c -> gsn_c + pi_c
R00650	0.20331	grdp_c + ipdp_c -> frdp_c + ppi_c
R00653	0.20331	gsn_c + h_c <-> gsn_m + h_m
R01041	0.20331	gsn_c + pi_c <-> gua_c + r1p_c
R00652	0.20331	gsn_e + h_e -> gsn_c + h_c
R01042	0.20331	gsn_m + pi_m <-> gua_m + r1p_m
R00654	0.20331	gthox_c + h_c + nadph_c -> 2 gthrd_c + nadp_c
R00656	0.20331	gthox_e -> gthox_c
R00655	0.20331	gthox_m + h_m + nadph_m -> 2 gthrd_m + nadp_m
R00660	0.20331	gthrd_e -> gthrd_c
R00802	0.20331	gtp_c + h_c + man1p_c -> gdpmann_c + ppi_c
R00663	0.20331	gtp_c + h2o_c -> ahdt_c + for_c + h_c
R00909	0.20331	gtp_c + h2o_c -> gdp_c + h_c + pi_c
R00827	0.20331	gtp_c + mevR_c -> 5pmev_c + gdp_c + h_c
R01082	0.20331	gtp_c + trdrd_c -> dgtp_c + h2o_c + trdox_c
R01219	0.20331	gtp_c + uri_c -> gdp_c + h_c + ump_c
R00665	0.20331	gtp_c + 2 h2o_c -> gmp_c + 2 h_c + 2 pi_c
R00664	0.20331	gtp_c + 3 h2o_c -> 25dhpp_c + for_c + 2 h_c + ppi_c
R00667	0.20331	gua_c + h_c + h2o_c -> nh4_c + xan_c
R00668	0.20331	gua_c + prpp_c -> gmp_c + ppi_c
R00670	0.20331	gua_c <-> gua_m
R00669	0.20331	gua_e + h_e -> gua_c + h_c
R00693	0.20331	h_c + hcysL_c <-> h_x + hcysL_x
R00202	0.20331	h_c + id3acald_c + nadh_c -> ind3eth_c + nad_c
R00758	0.20331	h_c + indpyr_c <-> co2_c + id3acald_c
R00407	0.20331	h_c + lacD_c <-> h_m + lacD_m
R00788	0.20331	h_c + lacL_c <-> h_m + lacL_m
R00793	0.20331	h_c + lysL_c <-> h_m + lysL_m
R00775	0.20331	h_c + mthgxl_c + nadph_c -> laldL_c + nadp_c
R00864	0.20331	h_c + nac_c + prpp_c -> nicrnt_c + ppi_c
R00199	0.20331	h_c + nadh_c + pacald_c -> 2phetoh_c + nad_c
R00852	0.20331	h_c + nadh_c + q6_m -> nad_c + q6h2_m
R00378	0.20331	h_c + nadph_c + o2_c + c140coa_c -> 2 h2o_c + nadp_c + c141coa_c
R01027	0.20331	h_c + nadph_c + o2_c + sphgn_c -> h2o_c + nadp_c + psphings_c
R00201	0.20331	h_c + nadph_c + pacald_c -> 2phetoh_c + nadp_c
R01232	0.20331	h_c + nadph_c + xyl_c -> nadp_c + xylt_c

R00299 0.20331 h_c + nadph_c + zym_int2_c -> nadp_c + zymst_c
R00890 0.20331 h_c + nmn_c <-> h_m + nmn_m
R00918 0.20331 h_c + oaa_c <-> h_m + oaa_m
R00932 0.20331 h_c + orn_c -> co2_c + ptrc_c
R01009 0.20331 h_c + phpyr_c -> co2_c + pacald_c
R00977 0.20331 h_c + pi_c <-> h_n + pi_n
R00980 0.20331 h_c + pi_c <-> h_v + pi_v
R00978 0.20331 h_c + pi_c <-> h_x + pi_x
R01036 0.20331 h_c + ptrc_e -> h_e + ptrc_c
R01060 0.20331 h_c + pyr_c <-> h_m + pyr_m
R01061 0.20331 h_c + pyr_c <-> h_x + pyr_x
R01115 0.20331 h_c + spmd_e -> h_e + spmd_c
R01119 0.20331 h_c + sprm_e -> h_e + sprm_c
R01158 0.20331 h_c + thrL_c <-> h_m + thrL_m
R01162 0.20331 h_c + thym_e -> h_e + thym_c
R01182 0.20331 h_c + tre_c <-> h_g + tre_g
R01185 0.20331 h_c + trpL_c <-> h_m + trpL_m
R01192 0.20331 h_c + tyrL_c <-> h_m + tyrL_m
R01193 0.20331 h_c + tyrL_c <-> h_x + tyrL_x
R01222 0.20331 h_c + valL_c <-> h_m + valL_m
R00706 0.20331 h_e + hisL_e -> h_c + hisL_c
R00727 0.20331 h_e + hxan_e -> h_c + hxan_c
R00746 0.20331 h_e + ileL_e -> h_c + ileL_c
R00761 0.20331 h_e + inost_e -> h_c + inost_c
R00760 0.20331 h_e + ins_e -> h_c + ins_c
R00773 0.20331 h_e + k_e <-> h_c + k_c
R00405 0.20331 h_e + lacD_e -> h_c + lacD_c
R00787 0.20331 h_e + lacL_e -> h_c + lacL_c
R00779 0.20331 h_e + leuL_e -> h_c + leuL_c
R00794 0.20331 h_e + lysL_e -> h_c + lysL_c
R00011 0.20331 h_e + malL_e -> h_c + malL_c
R00805 0.20331 h_e + man_e -> h_c + man_c
R00822 0.20331 h_e + metL_e -> h_c + metL_c
R00866 0.20331 h_e + na1_c <-> h_c + na1_e
R00892 0.20331 h_e + nmn_e -> h_c + nmn_c
R00933 0.20331 h_e + orn_e -> h_c + orn_c
R00972 0.20331 h_e + pheL_e -> h_c + pheL_c
R00992 0.20331 h_e + pntoR_e -> h_c + pntoR_c
R01017 0.20331 h_e + proL_e -> h_c + proL_c
R01059 0.20331 h_e + pyr_e <-> h_c + pyr_c
R01070 0.20331 h_e + ribflv_e -> h_c + ribflv_c
R01099 0.20331 h_e + serL_e -> h_c + serL_c
R01127 0.20331 h_e + succ_e -> h_c + succ_c
R01152 0.20331 h_e + thm_e -> h_c + thm_c
R01159 0.20331 h_e + thrL_e -> h_c + thrL_c
R01148 0.20331 h_e + thymd_e -> h_c + thymd_c
R01181 0.20331 h_e + tre_e -> h_c + tre_c
R01186 0.20331 h_e + trpL_e -> h_c + trpL_c
R01194 0.20331 h_e + tyrL_e -> h_c + tyrL_c
R01213 0.20331 h_e + ura_e -> h_c + ura_c
R01223 0.20331 h_e + valL_e -> h_c + valL_c
R01230 0.20331 h_e + xtsn_e -> h_c + xtsn_c
R01269 0.20331 h_g + ps_g -> co2_g + pe_g
R00705 0.20331 h_m + hisL_m <-> h_c + hisL_c
R00203 0.20331 h_m + id3acald_m + nadh_m -> ind3eth_m + nad_m
R00821 0.20331 h_m + metL_m <-> h_c + metL_c
R00865 0.20331 h_m + nac_m + prpp_m -> nicrnt_m + ppi_m
R00200 0.20331 h_m + nadh_m + pacald_m -> 2phetoh_m + nad_m
R00853 0.20331 h_m + nadh_m + q6_m -> nad_m + q6h2_m
R01176 0.20331 h_m + nadph_m + trdox_m -> nadp_m + trdrd_m
R00971 0.20331 h_m + pheL_m <-> h_c + pheL_c
R01122 0.20331 h_r + nadh_r + o2_r + sql_r -> Ssq23epx_r + h2o_r + nad_r
R01121 0.20331 h_r + nadph_r + o2_r + sql_r -> Ssq23epx_r + h2o_r + nadp_r
R00707 0.20331 h_v + hisL_c -> h_c + hisL_v
R00747 0.20331 h_v + ileL_c -> h_c + ileL_v
R00748 0.20331 h_v + ileL_v -> h_c + ileL_c
R00780 0.20331 h_v + leuL_c -> h_c + leuL_v
R00781 0.20331 h_v + leuL_v -> h_c + leuL_c
R00795 0.20331 h_v + lysL_c -> h_c + lysL_v
R01195 0.20331 h_v + tyrL_c -> h_c + tyrL_v
R01196 0.20331 h_v + tyrL_v -> h_c + tyrL_c
R00018 0.20331 h2o_c + hLkynr_c -> 3hanthrn_c + alaL_c
R00225 0.20331 h2o_c + iad_c -> ind3ac_c + nh4_c
R00122 0.20331 h2o_c + iamac_c -> ac_c + h_c + iamoh_c
R00210 0.20331 h2o_c + id3acald_c + nadp_c -> 2 h_c + ind3ac_c + nadph_c
R00900 0.20331 h2o_c + imp_c -> ins_c + pi_c
R00777 0.20331 h2o_c + laldL_c + nad_c -> 2 h_c + lacL_c + nadh_c
R00850 0.20331 h2o_c + n4abutn_c + nad_c -> 4aabutn_c + 2 h_c + nadh_c
R00208 0.20331 h2o_c + nad_c + pacald_c -> 2 h_c + nadh_c + pac_c
R00856 0.20331 h2o_c + nad_c -> adprib_c + h_c + ncam_c
R01126 0.20331 h2o_c + nadp_c + sucsal_c -> 2 h_c + nadph_c + succ_c
R00858 0.20331 h2o_c + nadp_c -> nad_c + pi_c
R00893 0.20331 h2o_c + ncam_c <-> nac_c + nh4_c
R01047 0.20331 h2o_c + o2_c + pyam5p_c -> h2o2_c + nh4_c + pydx5p_c
R00995 0.20331 h2o_c + o2_c + sprm_c -> aproa_c + h2o2_c + spmd_c
R01238 0.20331 h2o_c + pa_c -> dgr_c + pi_c
R00224 0.20331 h2o_c + pad_c -> nh4_c + pac_c

R01267 0.20331 h2o_c + pc_c -> chol_c + h_c + pa_c
R00090 0.20331 h2o_c + phthr_c -> 4hthr_c + pi_c
R00985 0.20331 h2o_c + ppmi12346p_c -> h_c + minohp_c + pi_c
R00987 0.20331 h2o_c + ppmi1346p_c -> h_c + mi13456p_c + pi_c
R01254 0.20331 h2o_c + ptd135bp_c -> pi_c + ptd3ino_c
R01258 0.20331 h2o_c + ptd145bp_c -> dgr_c + h_c + mi145p_c
R01257 0.20331 h2o_c + ptd145bp_c -> pi_c + ptd4ino_c
R00729 0.20331 h2o_c + pyam5p_c -> pi_c + pydam_c
R00430 0.20331 h2o_c + q6_m + spmd_c -> 13dampp_c + 4abutn_c + q6h2_m
R00014 0.20331 h2o_c + suchms_c <-> 2obut_c + h_c + nh4_c + succ_c
R01170 0.20331 h2o_c + thm_c -> 4ahmmp_c + 4mhetz_c + h_c
R01149 0.20331 h2o_c + thmmp_c -> pi_c + thm_c
R01179 0.20331 h2o_c + tre_c -> 2 glcD_c
R01177 0.20331 h2o_c + tre6p_c -> pi_c + tre_c
R00871 0.20331 h2o_c + udp_c -> h_c + pi_c + ump_c
R00640 0.20331 h2o_c + udpg_c -> 14glun_c + h_c + udp_c
R00901 0.20331 h2o_c + ump_c -> pi_c + uri_c
R00899 0.20331 h2o_c + xmp_c -> pi_c + xtsn_c
R00019 0.20331 h2o_c + 4 ppbng_c -> hmbil_c + 4 nh4_c
R00674 0.20331 h2o_c <-> h2o_m
R00673 0.20331 h2o_c <-> h2o_r
R00677 0.20331 h2o_c <-> h2o_v
R00676 0.20331 h2o_c <-> h2o_x
R00444 0.20331 h2o_e + pectin_e -> galur_e
R01150 0.20331 h2o_e + thmmp_e -> pi_e + thm_e
R01266 0.20331 h2o_e + 0.005 pc_e -> 0.02 c100_e + 0.06 c120_e + 0.5 g3pc_e + h_e + 0.27 c160_e + 0.17 c161_e + 0.05 c180_e + 0.24 c181_e + 0.1 c140_e
R01264 0.20331 h2o_e + 0.005 ptd1ino_e -> 0.02 c100_e + 0.06 c120_e + 0.5 g3pi_e + h_e + 0.27 c160_e + 0.17 c161_e + 0.05 c180_e + 0.24 c181_e + 0.1 c140_e
R01180 0.20331 h2o_g + tre_g -> 2 glcD_g
R00209 0.20331 h2o_m + id3acald_m + nad_m -> 2 h_m + ind3ac_m + nadh_m
R00211 0.20331 h2o_m + id3acald_m + nadp_m -> 2 h_m + ind3ac_m + nadph_m
R00844 0.20331 h2o_m + methf_m <-> 10fthf_m + h_m
R01141 0.20331 h2o_m + methf_m -> 5fthf_m + h_m
R00857 0.20331 h2o_m + nad_m -> adprib_m + h_m + ncam_m
R00859 0.20331 h2o_m + nadp_m -> nad_m + pi_m
R00894 0.20331 h2o_m + ncam_m <-> nac_m + nh4_m
R01253 0.20331 h2o_m + pgp_m -> pg_m + pi_m
R00997 0.20331 h2o_m + ppi_m -> h_m + 2 pi_m
R00675 0.20331 h2o_n <-> h2o_c
R01092 0.20331 h2o_r + psph1p_r -> pi_r + psphings_r
R01091 0.20331 h2o_r + sph1p_r -> pi_r + sphgn_r
R01033 0.20331 h2o_x + c080coa_x -> coa_x + h_x + c080_x
R01031 0.20331 h2o_x + c140coa_x -> coa_x + h_x + c140_x
R01032 0.20331 h2o_x + c180coa_x -> coa_x + h_x + c180_x
R01143 0.20331 h2o2_c + trdrd_c -> 2 h2o_c + trdox_c
R00671 0.20331 h2o2_c <-> h2o2_n
R01144 0.20331 h2o2_m + trdrd_m <-> 2 h2o_m + trdox_m
R01145 0.20331 h2o2_n + trdrd_n -> 2 h2o_n + trdox_n
R01146 0.20331 h2o2_x + trdrd_x <-> 2 h2o_x + trdox_x
R00691 0.20331 hco3_c <-> hco3_n
R00830 0.20331 hcysL_c + mhpglu_c -> hpglu_c + metL_c
R00696 0.20331 hemeO_m + nadh_m + o2_m -> h2o_m + hemeA_m + nad_m
R00702 0.20331 hexdp_c <-> hexdp_m
R01210 0.20331 hmbil_c -> h2o_c + uppg3_c
R00715 0.20331 hmgcoa_c <-> hmgcoa_m
R00728 0.20331 hxan_c + prpp_c -> imp_c + ppi_c
R00732 0.20331 iamoh_c <-> iamoh_m
R00733 0.20331 ibutac_c -> ibutac_e
R00740 0.20331 icit_c -> glx_c + succ_c
R00736 0.20331 icit_m + nad_m -> akg_m + co2_m + nadh_m
R00742 0.20331 id3acald_c <-> id3acald_m
R00741 0.20331 id3acald_e -> id3acald_c
R00751 0.20331 ileL_m -> ileL_c
R00755 0.20331 ind3ac_c <-> ind3ac_m
R00757 0.20331 ind3eth_c <-> ind3eth_m
R00756 0.20331 ind3eth_e -> ind3eth_c
R01044 0.20331 ins_c + pi_c <-> hxan_c + r1p_c
R00762 0.20331 ipdp_c <-> dmpp_c
R00763 0.20331 ipdp_c <-> ipdp_m
R01008 0.20331 ipdp_m + pendp_m -> hexdp_m + ppi_m
R00097 0.20331 L2aadp_c + atp_c + h_c + nadph_c -> L2aadp6sa_c + amp_c + nadp_c + ppi_c
R00406 0.20331 lacD_c + pyr_m <-> lacD_m + pyr_c
R00776 0.20331 lanost_e -> lanost_c
R00778 0.20331 Lcystin_v + h_v -> Lcystin_c + h_c
R00774 0.20331 Lkynr_c + h_c + nadph_c + o2_c -> h2o_c + hLkynr_c + nadp_c
R00020 0.20331 Lkynr_c + h2o_c -> alaL_c + anth_c + h_c
R00811 0.20331 malL_c + nad_c <-> h_c + nadh_c + oaa_c
R00012 0.20331 malL_c + pi_m <-> malL_m + pi_c
R00812 0.20331 malL_m + nad_m <-> h_m + nadh_m + oaa_m
R00815 0.20331 malL_m + nad_m -> co2_m + nadh_m + pyr_m
R00816 0.20331 malL_m + nadp_m -> co2_m + nadph_m + pyr_m
R00813 0.20331 malL_x + nad_x <-> h_x + nadh_x + oaa_x
R00799 0.20331 malL_x + oaa_c <-> malL_c + oaa_x
R00982 0.20331 man1p_c <-> man6p_c
R00803 0.20331 man6p_c <-> f6p_c
R00804 0.20331 mannan_c <-> mannan_r
R01242 0.20331 manol_c + nad_c <-> fru_c + nadh_c + h_c
R01299 0.20331 manol_e -> manol_c

R01292	0.20331	meoh_e -> meoh_x
R01293	0.20331	meoh_x + o2_x -> fald_x + h2o2_x
R00828	0.20331	mevR_c + utp_c -> 5pmev_c + h_c + udp_c
R00836	0.20331	mi145p_c <-> mi145p_n
R00807	0.20331	micit_m -> pyr_m + succ_m
R00839	0.20331	minohp_c <-> minohp_n
R00846	0.20331	mlthf_c + nad_c -> methf_c + nadh_c
R00847	0.20331	mlthf_m + nadp_m <-> methf_m + nadph_m
R00993	0.20331	N1aspmd_c + h2o_c + o2_c -> aproa_c + aprut_c + h2o2_c
R00994	0.20331	N1sprm_c + h2o_c + o2_c -> N1aspmd_c + aproa_c + h2o2_c
R00851	0.20331	nac_e -> nac_c
R01003	0.20331	nad_c + pphn_c -> 34hpp_c + co2_c + nadh_c
R00297	0.20331	nad_c + zym_int1_c -> co2_c + h_c + nadh_c + zym_int2_c
R01016	0.20331	nad_m + proL_m -> 1pyr5c_m + 2 h_m + nadh_m
R00863	0.20331	nad_n <-> nad_c
R00792	0.20331	nadp_c + serL_c <-> 2amsa_c + h_c + nadph_c
R00860	0.20331	nadp_e <-> nadp_c
R00881	0.20331	Nbfortyr_e -> Nbfortyr_c
R00886	0.20331	nh4_c <-> nh4_n
R00887	0.20331	nh4_c <-> nh4_x
R00884	0.20331	nh4_c -> nh4_e
R00953	0.20331	o2_c + pdx5p_c <-> h2o2_c + pydx5p_c
R01051	0.20331	o2_c + pydxn_c <-> h2o2_c + pydx_c
R01183	0.20331	o2_c + trpL_c -> Lfmkynr_c
R00915	0.20331	o2_c <-> o2_r
R00917	0.20331	oaa_e -> oaa_c
R00981	0.20331	oh1_m + pi_c <-> oh1_c + pi_m
R01248	0.20331	pa_c <-> pa_m
R00943	0.20331	pacald_c <-> pacald_m
R00942	0.20331	pacald_e -> pacald_c
R00944	0.20331	pan4p_c <-> pan4p_m
R00946	0.20331	pantR_c <-> pantR_m
R00947	0.20331	pap_c <-> pap_m
R01250	0.20331	pe_c <-> pe_g
R00954	0.20331	pendp_c <-> pendp_m
R00970	0.20331	pheac_e -> pheac_c
R00990	0.20331	pi_c + rnam_c <-> h_c + ncam_c + r1p_c
R01167	0.20331	pi_c + thymd_c <-> 2dr1p_c + thym_c
R01054	0.20331	pi_c + uri_c <-> r1p_c + ura_c
R01046	0.20331	pi_c + xtsn_c <-> r1p_c + xan_c
R01128	0.20331	pi_m + succ_c -> pi_c + succ_m
R01006	0.20331	pppg9_c <-> pppg9_m
R01018	0.20331	proL_c <-> proL_m
R01212	0.20331	prpp_c + ura_c -> ppi_c + ump_c
R01229	0.20331	prpp_c + xan_c -> ppi_c + xmp_c
R01021	0.20331	prpp_c <-> prpp_m
R01273	0.20331	ps_c <-> ps_g
R01026	0.20331	psph1p_c -> 2hhxdal_c + ethamp_c
R01025	0.20331	psph1p_c -> psph1p_r
R01275	0.20331	ptd1ino_c <-> ptd1ino_n
R01276	0.20331	ptd4ino_c <-> ptd4ino_n
R01058	0.20331	pyr_c -> pyr_e
R01130	0.20331	q6_m + succ_m <-> fum_m + q6h2_m
R01064	0.20331	quln_c <-> quln_m
R01001	0.20331	r1p_c <-> r5p_c
R01233	0.20331	r5p_c + ura_c <-> h2o_c + psd5p_c
R01301	0.20331	rhamD_c -> rhul_c
R01300	0.20331	rhamD_e -> rhamD_c
R01302	0.20331	rhul_c + atp_c -> rhulp_c + adp_c
R01303	0.20331	rhulp_c <-> dhap_c + laldL_c
R01071	0.20331	ribflv_c <-> ribflv_m
R00370	0.20331	ru5pD_c -> db4p_c + for_c + h_c
R00528	0.20331	s17bp_c <-> dhap_c + e4p_c
R01241	0.20331	sbtD_c + nad_c <-> fru_c + nadh_c + h_c
R01093	0.20331	sbtD_e -> sbtD_c
R01094	0.20331	sbtL_e -> sbtL_c
R01096	0.20331	serL_c -> nh4_c + pyr_c
R01101	0.20331	Sfglutth_c + h2o_c <-> for_c + gthrd_c + h_c
R01110	0.20331	so3_c -> so3_e
R01113	0.20331	sph1p_c -> ethamp_c + hxdcal_c
R01112	0.20331	sph1p_c -> sph1p_r
R01116	0.20331	spmd_e -> spmd_c
R01124	0.20331	sql_c <-> sql_r
R01125	0.20331	srbL_e -> srbL_c
R00791	0.20331	Ssq23epx_c -> lanost_c
R01120	0.20331	Ssq23epx_r <-> Ssq23epx_c
R00606	0.20331	star_c + pi_c -> amy_c + g1p_c
R00336	0.20331	T4hcinnm_m + atp_m + coa_m -> amp_m + coucoa_m + ppi_m
R01139	0.20331	taur_e -> taur_c
R01151	0.20331	thmpp_c -> thmpp_m
R01154	0.20331	thrL_c -> acald_c + gly_c
R01156	0.20331	thrL_m -> 2obut_m + nh4_m
R01174	0.20331	trdox_c <-> trdox_x
R01078	0.20331	trdrd_c + udp_c -> dudp_c + h2o_c + trdox_c
R01084	0.20331	trdrd_c + utp_c -> dutp_c + h2o_c + trdox_c
R01175	0.20331	trdrd_c <-> trdrd_x
R01079	0.20331	trdrd_n + udp_n -> dudp_n + h2o_n + trdox_n

R00320	0.20331 udpacgal_c -> chitin_c + h_c + udp_c
R00015	0.20331 udpg_c <-> udpgal_c
R00035	0.20331 udpg_c -> 16BDglcn_c + h_c + udp_c
R00607	0.20331 udpg_c -> amy_c + h_c + udp_c
R01203	0.20331 udpgal_c -> udpgal_g
R01207	0.20331 ump_c <-> ump_n
R01228	0.20331 xan_e -> xan_c
R01297	0.20331 xu5p_c -> xu5p_x
R01234	0.20331 zymst_e -> zymst_c
R01283	0.20331 0.188 nad_c + 0.168 nadp_c + 0.163 coa_c + 0.012 ACP_c + 0.146 q6_m + 0.281 thf_c + 0.274 fmn_c + 0.159 fad_c -> COF
R00998	0.20331 2 5aop_c -> h_c + 2 h2o_c + ppbng_c
R00110	0.20331 2 acald_c -> actnR_c
R00103	0.20331 2 accoa_c -> aacoa_c + coa_c
R01209	0.20331 2 amet_c + uppg3_c -> 2 ahcys_c + dscl_c + h_c
R00307	0.20331 2 atp_n + glnL_n + h2o_n + hco3_n -> 2 adp_n + cbp_n + gluL_n + 2 h_n + pi_n
R01068	0.20331 2 dmlz_c -> 4r5au_c + ribflv_c
R00403	0.20331 2 ficytc_m + lacD_c -> 2 focytc_m + pyr_c
R00404	0.20331 2 ficytc_m + lacD_m -> 2 focytc_m + pyr_m
R00786	0.20331 2 ficytc_m + lacL_c -> 2 focytc_m + pyr_c
R00310	0.20331 2 focytc_m + h2o2_m -> 2 ficytc_m + 2 h2o_m
R01123	0.20331 2 frdp_c + h_c + nadph_c -> nadp_c + 2 ppi_c + sql_c
R00657	0.20331 2 gthrd_c + h2o2_c <-> gthox_c + 2 h2o_c
R00658	0.20331 2 gthrd_m + h2o2_m <-> gthox_m + 2 h2o_m
R01204	0.20331 2 h_c + h2o_c + urdglyc_c <-> co2_c + glx_c + 2 nh4_c
R00790	0.20331 2 h_c + lanost_c + 3 nadh_c + 3 o2_c -> 44mctr_c + for_c + 4 h2o_c + 3 nad_c
R00789	0.20331 2 h_c + lanost_c + 3 nadph_c + 3 o2_c -> 44mctr_c + for_c + 4 h2o_c + 3 nadp_c
R00021	0.20331 2 h_c + prpp_c + quln_c -> co2_c + nicrnt_c + ppi_c
R01221	0.20331 2 h_c + ump_m + utp_c -> 2 h_m + ump_c + utp_m
R01214	0.20331 2 h_e + urea_e -> 2 h_c + urea_c
R00022	0.20331 2 h_m + prpp_m + quln_m -> co2_m + nicrnt_m + ppi_m
R00911	0.20331 2 h2o_c + ind3acnl_c -> ind3ac_c + nh4_c
R01052	0.20331 2 h2o_c + nh4_c + 0.5 o2_c + pydx_c <-> 2 h2o2_c + pydam_c
R01220	0.20331 2 h2o_c + utp_c -> 2 h_c + 2 pi_c + ump_c
R01147	0.20331 2 h2o_e + thmpp_e -> h_e + 2 pi_e + thm_e
R00304	0.20331 2 h2o2_c -> 2 h2o_c + o2_c
R00305	0.20331 2 h2o2_x -> 2 h2o_x + o2_x
R00882	0.20331 2 Nfortyr_c + h_c + nadph_c -> Nbfortyr_c + nadp_c
R01007	0.20331 3 o2_m + 2 pppg9_m -> 6 h2o_m + 2 ppp9_m
R01211	0.20331 4 h_c + uppg3_c -> 4 co2_c + cpppg3_c