Molecular Codes in Large Metabolic Networks - Supplementary Material

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1 Supplement

1.1 Occurents of Signs and Meanings

Results table of the occurents of a particular species as a sign or a meaning of the modified network iIT341 of *Helicobacter pylori* 26695.

ID	Species	Sign	Meaning	Sum
M_atp_c	ATP	11	0	11
M_nadp_c	Nicotinamide adenine dinucleotide phosphate	2	5	7
M_13dpg_c	3-Phospho-D-glyceroyl phosphate	0	6	6
M_10fthf_c, M_for_c, M_thf_c	10-Formyltetrahydrofolate, Formate, 5, 6, 7, 8-Tetrahydrofolate	0	5	5
M_dadp_c	DADP	0	4	4
M_nad_c	Nicotinamide adenine dinucleotide	1	3	4
M_1pyr5c_c	1-Pyrroline-5-carboxylate	3	0	3
M_4abut_c, M_glu__L_c	4-Aminobutanoate, L-Glutamate	0	3	3
M_adp_c	ADP	3	0	3
M_mlthf_c	5, 10-Methylenetetrahydrofolate	3	0	3
M_pi_c	Phosphate	1	2	3
M_3ig3p_c, M_g3p_c, M_indole_c	C'-3-(Indolyl)-glycerol 3-phosphate, Glyceraldehyde 3-phosphate, Indole	2	0	2
M_acald_c, M_nh4_c, M_pi_c, M_pser__L_c, M_pyr_c, M_ser__L_c	Acetaldehyde, Ammonium, Phosphate, O-Phospho-L-serine, Pyruvate, L-Serine	2	0	2
M_fmn_c, M_pi_c, M_ribflv_c	FMN, Phosphate, Riboflavin	0	2	2
M_glyc3p_c	Glycerol 3-phosphate	2	0	2
M_pep_c	Phosphoenolpyruvate	2	0	2
M_pi_c, M_ppi_c	Phosphate, Diphosphate	1	1	2
M_trdrd_c	Reduced thioredoxin	2	0	2
M_trp__L_c	L-Tryptophan	0	2	2
M_uacgam_c	UDP-N-acetyl-D-glucosamine	2	0	2
M_uamr_c	UDP-N-acetylmuramate	0	2	2
M_23dhdp_c	2, 3-Dihydrodipicolinate	0	1	1
M_2ddg6p_c, M_acald_c, M_dxyl5p_c, M_g3p_c, M_pyr_c	2-Dehydro-3-deoxy-D-gluconate 6-phosphate, Acetaldehyde, 1-deoxy-D-xylulose 5-phosphate, Glyceraldehyde 3-phosphate, Pyruvate	1	0	1
M_2me4p_c	2-C-methyl-D-erythritol 4-phosphate	0	1	1
M_4abut_c, M_gln__L_c, M_glu__L_c, M_nh4_c	4-Aminobutanoate, L-Glutamine, L-Glutamate, Ammonium	1	0	1
M_4pasp_c	4-Phospho-L-aspartate	0	1	1
M_akg_c	2-Oxoglutarate	0	1	1
M_amp_c, M_pap_c, M_pi_c	AMP, Adenosine 3', 5'-bisphosphate, Phosphate	0	1	1

M_dhap_c, M_g3p_c	Dihydroxyacetone phosphate, Glyceraldehyde 3-phosphate	0	1	1
M_dudp_c	DUDP	0	1	1
M_dxyl5p_c	1-deoxy-D-xylulose 5-phosphate	1	0	1
M_e4p_c	D-Erythrose 4-phosphate	1	0	1
M_f6p_c	D-Fructose 6-phosphate	0	1	1
M_hom__L_c	L-Homoserine	1	0	1
M_nadh_c	Nicotinamide adenine dinucleotide - reduced	0	1	1
M_nadph_c	Nicotinamide adenine dinucleotide phosphate - reduced	1	0	1
M_trdox_c	Oxidized thioredoxin	1	0	1

1.2 Unique BMCs in iIT341

Results table of all found BMCs in the non modified network iIT341 of *Helicobacter pylori* 26695. Represented are the IDs of the metabolic species which can be found in the original SBML file `http://bigg.ucsd.edu/models/iIT341`. The given contexts are one pair of examples, other contexts to realize the mapping might be possible.

Sign 1	Sign 2	Meaning 1	Meaning 2	Context 1	Context 2
M_pphn_c	M_tyr__L_e	M_34hpp_c	M_h2co3_c	M_4abut_c, M_co2_c, M_glu__L_c, M_h_e, M_hco3_c, M_nad_c	M_akg_c, M_co2_c, M_h_c, M_h_e
M_25aics_c, M_aicar_c, M_fum_c	M_adp_c	M_fprica_c	M_mal__L_c	M_10fthf_c, M_atp_c, M_fum_c, M_fum_e, M_h_c, M_h_e, M_pi_c	M_aicar_c, M_for_c, M_fum_e, M_h2o_c, M_h_c, M_h_e, M_pi_c, M_thf_c
M_25aics_c, M_aicar_c, M_fum_c	M_atp_c	M_fprica_c	M_mal__L_c	M_10fthf_c, M_adp_c, M_for_c, M_fum_c, M_fum_e, M_h_c, M_h_e, M_thf_c	M_adp_c, M_aicar_c, M_for_c, M_fum_e, M_h2o_c, M_h_c, M_h_e, M_thf_c
M_25aics_c, M_aicar_c, M_fum_c	M_for_c	M_fprica_c	M_mal__L_c	M_10fthf_c, M_adp_c, M_atp_c, M_fum_c, M_fum_e, M_h_c, M_h_e, M_thf_c	M_adp_c, M_aicar_c, M_atp_c, M_fum_e, M_h2o_c, M_h_c, M_h_e, M_pi_c, M_thf_c
M_25aics_c, M_aicar_c, M_fum_c	M_h_e	M_fprica_c	M_mal__L_c	M_10fthf_c, M_adp_c, M_atp_c, M_for_c, M_fum_c, M_fum_e, M_h_c, M_pi_c	M_adp_c, M_aicar_c, M_for_c, M_fum_e, M_h2o_c, M_h_c, M_pi_c, M_thf_c
M_25aics_c, M_aicar_c, M_fum_c	M_pi_c	M_fprica_c	M_mal__L_c	M_10fthf_c, M_adp_c, M_atp_c, M_fum_c, M_fum_e, M_h_c, M_h_e	M_adp_c, M_aicar_c, M_for_c, M_fum_e, M_h2o_c, M_h_c, M_h_e, M_thf_c
M_h_e	M_orot5p_c	M_co2_c	M_orot_c	M_cpppg1_c, M_duri_c, M_duri_e, M_ppi_c, M_prpp_c, M_ump_c, M_uppg1_c	M_cpppg1_c, M_duri_c, M_h_c, M_orot_e
M_2mecdp_c, M_2p4c2me_c, M_cmp_c	M_h_e	M_cdp_c	M_h2mb4p_c	M_2mecdp_c, M_adp_c, M_atp_c, M_ctp_c, M_h2o_c, M_nh4_c, M_pi_c	M_adp_c, M_cmp_c, M_ctp_c, M_h2o_c, M_h_c, M_nh4_c, M_pi_c, M_pi_e, M_utp_c
M_2mecdp_c, M_2p4c2me_c, M_cmp_c	M_h_e	M_ctp_c	M_h2mb4p_c	M_2mecdp_c, M_adp_c, M_atp_c, M_h2o_c, M_nh4_c, M_pi_c	M_adp_c, M_cdp_c, M_cmp_c, M_h2o_c, M_h_c, M_nh4_c, M_pi_c
M_2mecdp_c, M_2p4c2me_c, M_cmp_c	M_pi_c	M_cdp_c	M_h2mb4p_c	M_2mecdp_c, M_adp_c, M_atp_c, M_ctp_c, M_h2o_c, M_h_e	M_adp_c, M_cmp_c, M_ctp_c, M_h2o_c, M_h_c, M_h_e, M_nh4_c, M_utp_c

M_2mecdp_c, M_2p4c2me_c, M_cmp_c	M_pi_c	M_ctp_c	M_h2mb4p_c	M_2mecdp_c, M_adp_c, M_atp_c, M_h2o_c, M_h_e	M_adp_c, M_cdp_c, M_cmp_c, M_h2o_c, M_h_c, M_h_e
M_2mecdp_c, M_2p4c2me_c, M_cmp_c	M_pi_e	M_cdp_c	M_h2mb4p_c	M_2mecdp_c, M_adp_c, M_atp_c, M_ctp_c, M_h2o_c, M_h_e	M_adp_c, M_cmp_c, M_ctp_c, M_h2o_c, M_h_c, M_h_e, M_nh4_c, M_utp_c
M_2mecdp_c, M_2p4c2me_c, M_cmp_c	M_pi_e	M_ctp_c	M_h2mb4p_c	M_2mecdp_c, M_adp_c, M_atp_c, M_h2o_c, M_h_e	M_adp_c, M_cdp_c, M_cmp_c, M_h2o_c, M_h_c, M_h_e
M_h2o_c	M_h_e	M_2obut_c, M_nh4_c, M_thr__L_c	M_h2co3_c	M_26dap_LL_c, M_26dap__M_c, M_2obut_c, M_hco3_c, M_lys__L_c, M_lys__L_e, M_nh4_c, M_phom_c	M_26dap_LL_c, M_26dap__M_c, M_co2_c, M_h_c, M_lys__L_c, M_lys__L_e, M_nh4_c, M_pi_c, M_thr__L_e
M_h2o_c	M_h_e	M_ser__D_c	M_succ_c	M_2obut_c, M_cys__L_c, M_cyst__L_c, M_h_c, M_nh4_c, M_pi_c, M_pser__D_c, M_succ_e	M_2obut_c, M_cyst__L_c, M_h_c, M_nh4_c, M_pi_c, M_ser__D_e, M_suchms_c
M_acac_e	M_h2o_c	M_h2co3_c	M_succ_c	M_26dap_LL_c, M_26dap__M_c, M_aacoa_c, M_acac_c, M_h_e, M_hco3_c, M_lys__L_c, M_sl26da_c	M_26dap_LL_c, M_26dap__M_c, M_aacoa_c, M_co2_c, M_h_c, M_h_e, M_lys__L_c, M_lys__L_e, M_succoa_c
M_atp_c	M_h2o_c	M_dutp_c	M_utp_c	M_adp_c, M_ctp_c, M_dcdp_c, M_dudp_c, M_dump_c, M_h_c	M_adp_c, M_dcdp_c, M_dctp_c, M_h_c, M_nh4_c, M_pi_c, M_ppi_c, M_udp_c
M_h_e	M_o2s_c	M_h2o_c	M_no3_c	M_adp_c, M_atp_c, M_ficytcc553_c, M_focytcc553_c, M_no_c, M_no_e, M_pi_c	M_adp_c, M_atp_c, M_ficytcc553_c, M_h_c, M_no3_e
M_fum_c	M_h_e	M_mal__L_c	M_succ_c	M_fad_c, M_fadh2_c, M_h2o_c, M_h_c, M_oaa_c, M_succ_e	M_fad_c, M_fadh2_c, M_h_c, M_mal__L_e, M_mql6_c
M_h2o_c	M_h_e	M_ala__D_c, M_ala__L_c	M_h2co3_c	M_acald_c, M_acmam_c, M_acmama_c, M_ala__D_c, M_hco3_c, M_na1_c	M_acald_c, M_acmam_c, M_ala__D_c, M_ala__L_e, M_co2_c
M_h_e	M_mql6_c	M_acald_c	M_succ_e	M_co2_c, M_dhor__S_c, M_fum_c, M_fum_e, M_lac__D_c, M_nadp_c, M_nadph_c, M_orot_c, M_pyr_c	M_co2_c, M_dhor__S_c, M_fum_c, M_h_c, M_lac__D_c, M_nadp_c, M_orot_c, M_succ_c
M_h_e	M_mql6_c	M_co2_c	M_succ_e	M_acald_c, M_dhor__S_c, M_fum_c, M_fum_e, M_lac__D_c, M_nadp_c, M_nadph_c, M_orot_c, M_pyr_c	M_acald_c, M_dhor__S_c, M_fum_c, M_h_c, M_lac__D_c, M_nadp_c, M_orot_c, M_succ_c
M_h_e	M_mqn6_c	M_acald_c	M_succ_c	M_co2_c, M_dhor__S_c, M_fum_c, M_fum_e, M_lac__D_c, M_nadp_c, M_nadph_c, M_orot_c, M_pyr_c	M_co2_c, M_dhor__S_c, M_fum_e, M_h_c, M_lac__D_c, M_nadp_c, M_orot_c, M_succ_e

M_h_e	M_mqn6_c	M_acald_c	M_succ_e	M_co2_c, M_dhor__S_c, M_fum_c, M_fum_e, M_lac__D_c, M_nadp_c, M_nadph_c, M_orot_c, M_pyr_c	M_co2_c, M_dhor__S_c, M_fum_c, M_h_c, M_lac__D_c, M_nadp_c, M_orot_c, M_succ_c
M_h_e	M_mqn6_c	M_co2_c	M_succ_c	M_acald_c, M_dhor__S_c, M_fum_c, M_fum_e, M_lac__D_c, M_nadp_c, M_nadph_c, M_orot_c, M_pyr_c	M_acald_c, M_dhor__S_c, M_fum_e, M_h_c, M_lac__D_c, M_nadp_c, M_orot_c, M_succ_e
M_h_e	M_mqn6_c	M_co2_c	M_succ_e	M_acald_c, M_dhor__S_c, M_fum_c, M_fum_e, M_lac__D_c, M_nadp_c, M_nadph_c, M_orot_c, M_pyr_c	M_acald_c, M_dhor__S_c, M_fum_c, M_h_c, M_lac__D_c, M_nadp_c, M_orot_c, M_succ_c
M_fmnh2_c	M_o2_c	M_h2co3_c	M_pi_c	M_cpppg3_c, M_fmn_c, M_hco3_c, M_nadp_c, M_nadph_c, M_ppp9_c, M_pppg9_c	M_cpppg3_c, M_h2o_c, M_h_c, M_nadp_c
M_fmnh2_c	M_o2_c	M_h2co3_c	M_ribflv_c	M_cpppg3_c, M_fmn_c, M_hco3_c, M_nadp_c, M_nadph_c, M_pi_c, M_ppp9_c, M_pppg9_c	M_cpppg3_c, M_h2o_c, M_h_c, M_nadp_c
M_nadp_c	M_o2_c	M_h2co3_c	M_pi_c	M_cpppg3_c, M_fmn_c, M_fmnh2_c, M_hco3_c, M_nadph_c, M_ppp9_c, M_pppg9_c	M_cpppg3_c, M_fmnh2_c, M_h2o_c, M_h_c
M_nadp_c	M_o2_c	M_h2co3_c	M_ribflv_c	M_cpppg3_c, M_fmn_c, M_fmnh2_c, M_hco3_c, M_nadph_c, M_pi_c, M_ppp9_c, M_pppg9_c	M_cpppg3_c, M_fmnh2_c, M_h2o_c, M_h_c
M_atp_c	M_h2o_c, M_hmbil_c, M_uppg3_c	M_co2_c	M_pi_c	M_adp_c, M_cpppg3_c, M_fad_c, M_fmn_c, M_h2co3_c, M_hco3_c, M_ribflv_c, M_uppg3_c	M_adp_c, M_cpppg3_c, M_fad_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_ribflv_c
M_atp_c	M_h2o_c, M_hmbil_c, M_uppg3_c	M_cpppg3_c	M_pi_c	M_adp_c, M_fad_c, M_fmn_c, M_h2co3_c, M_hco3_c, M_ribflv_c, M_uppg3_c	M_adp_c, M_fad_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_ribflv_c
M_atp_c	M_h2o_c, M_hmbil_c, M_uppg3_c	M_h2co3_c	M_pi_c	M_adp_c, M_cpppg3_c, M_fad_c, M_fmn_c, M_hco3_c, M_ribflv_c	M_adp_c, M_cpppg3_c, M_fad_c, M_h2o_c, M_h_c, M_ribflv_c
M_h_e	M_o2s_c	M_h2co3_c	M_no3_c	M_co2_c, M_glx_c, M_glyclt_c, M_hco3_c, M_no_c, M_tyr__L_c, M_tyr__L_e	M_co2_c, M_glx_c, M_h_c, M_no3_e
M_h2o_c	M_h_e	M_adp_c	M_ser__D_c	M_atp_c, M_gal1p_c, M_h_c, M_pi_c, M_ser__D_e, M_so4_c, M_so4_e	M_atp_c, M_gal_e, M_h_c, M_pser__D_c
M_h_e	M_mql6_c	M_orot_c	M_succ_e	M_cbasp_c, M_fum_c, M_fum_e, M_h2o_c, M_h_c, M_mal__L_c, M_oaa_c, M_orot_e	M_dhor__S_c, M_fum_c, M_h_c, M_mal__L_c, M_oaa_c, M_succ_c
M_h_e	M_mqn6_c	M_orot_c	M_succ_c	M_cbasp_c, M_fum_c, M_fum_e, M_h2o_c, M_h_c, M_mal__L_c, M_oaa_c, M_orot_e	M_dhor__S_c, M_fum_e, M_h_c, M_mal__L_c, M_oaa_c, M_succ_e
M_h_e	M_mqn6_c	M_orot_c	M_succ_e	M_cbasp_c, M_fum_c, M_fum_e, M_h2o_c, M_h_c, M_mal__L_c, M_oaa_c, M_orot_e	M_dhor__S_c, M_fum_c, M_h_c, M_mal__L_c, M_oaa_c, M_succ_c

M_cys__L_c	M_h_e	M_ac_c	M_fum_c	M_2obut_c, M_achms_c, M_cyst__L_c, M_fum_e, M_h2o_c, M_h_c, M_mal__L_c, M_nh4_c, M_succ_e	M_ac_e, M_cyst__L_c, M_fum_e, M_h_c, M_mal__L_c, M_nh4_c, M_suchms_c
M_cys__L_c	M_h_e	M_ac_c	M_succ_c	M_2obut_c, M_achms_c, M_cyst__L_c, M_fum_c, M_fum_e, M_h2o_c, M_h_c, M_mal__L_c, M_nh4_c, M_succ_e	M_ac_e, M_cyst__L_c, M_fum_c, M_fum_e, M_h_c, M_mal__L_c, M_nh4_c, M_suchms_c
M_cys__L_c	M_h_e	M_ac_c	M_succ_e	M_2obut_c, M_achms_c, M_cyst__L_c, M_fum_c, M_h2o_c, M_h_c, M_mal__L_c, M_nh4_c, M_succ_c	M_ac_e, M_cyst__L_c, M_fum_c, M_fum_e, M_h_c, M_mal__L_c, M_nh4_c, M_suchms_c
M_h2o_c	M_h_e	M_ac_c	M_h2co3_c	M_26dap__M_c, M_hco3_c, M_lys__L_c, M_succ_c, M_succ_e, M_u3aga_HP_c	M_ac_e, M_co2_c
M_h2o_c	M_h_e	M_co2_c	M_orn_c	M_agm_c, M_h2co3_c, M_h_c, M_hco3_c, M_nh4_c, M_orn_e	M_arg__L_c, M_arg__L_e
M_h2o_c	M_h_e	M_h2co3_c	M_orn_c	M_agm_c, M_arg__L_e, M_co2_c, M_h_c, M_nh4_c, M_orn_e	M_arg__L_c, M_arg__L_e, M_hco3_c
M_3dhq_c, M_3dhsk_c, M_h2o_c	M_nad_c	M_4hglusa_c	M_nadp_c	M_1p3h5c_c, M_3dhsk_c, M_4hpro_LT_c, M_adp_c, M_atp_c, M_e4hglu_c, M_h_c	M_4hpro_LT_c, M_adp_c, M_e4hglu_c, M_h2o_c, M_h_c, M_nadh_c, M_nadph_c
M_h_e	M_lac__D_c, M_lac__L_c	M_acald_c	M_succ_c	M_co2_c, M_fad_c, M_fum_c, M_fum_e, M_mqn6_c, M_pyr_c	M_co2_c, M_fad_c, M_fum_e, M_h_c, M_mql6_c, M_mqn6_c, M_succ_e
M_h_e	M_lac__D_c, M_lac__L_c	M_acald_c	M_succ_e	M_co2_c, M_fad_c, M_fum_c, M_fum_e, M_mqn6_c, M_pyr_c	M_co2_c, M_fad_c, M_fum_c, M_h_c, M_mql6_c, M_mqn6_c, M_succ_c
M_h_e	M_lac__D_c, M_lac__L_c	M_co2_c	M_succ_c	M_acald_c, M_fad_c, M_fum_c, M_fum_e, M_mqn6_c, M_pyr_c	M_acald_c, M_fad_c, M_fum_e, M_h_c, M_mql6_c, M_mqn6_c, M_succ_e
M_h_e	M_lac__D_c, M_lac__L_c	M_co2_c	M_succ_e	M_acald_c, M_fad_c, M_fum_c, M_fum_e, M_mqn6_c, M_pyr_c	M_acald_c, M_fad_c, M_fum_c, M_h_c, M_mql6_c, M_mqn6_c, M_succ_c
M_h_e	M_o2s_c	M_no3_c	M_pi_c	M_dhap_c, M_f6p_c, M_fdp_c, M_g3p_c, M_h_c, M_no3_e	M_dhap_c, M_f6p_c, M_fdp_c, M_g3p_c, M_no_c, M_no_e, M_o2_c, M_pi_e
M_h_e	M_orot5p_c	M_orot_c	M_ump_c	M_ala__D_c, M_ala__L_c, M_ala__L_e, M_co2_c, M_cpppg1_c, M_h_c, M_orot_e	M_ala__D_c, M_ala__L_c, M_ala__L_e, M_co2_c, M_cpppg1_c, M_ppi_c, M_prpp_c, M_uppg1_c, M_ura_e
M_gdpddman_c, M_gdpmann_c, M_h2o_c	M_icit_c	M_gdpfuc_c	M_h2co3_c	M_3dhsk_c, M_akg_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c, M_phpyr_c, M_skm_c	M_3dhsk_c, M_co2_c, M_gdpddman_c, M_h_c, M_nadp_c

M_gdpddman_c, M_gdpmann_c, M_h2o_c	M_icit_c	M_gdpfuc_c	M_hco3_c	M_3dhsk_c, M_akg_c, M_h2co3_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c, M_phpyr_c, M_skm_c	M_3dhsk_c, M_co2_c, M_gdpddman_c, M_h2co3_c, M_h_c, M_nadp_c
M_h_e	M_o2s_c	M_no3_c	M_ser__D_c	M_h_c, M_no3_e, M_o2_c, M_pi_c, M_pro__L_c, M_pro__L_e, M_pser__D_c	M_h_c, M_no_c, M_o2_c, M_pi_c, M_pro__L_c, M_pro__L_e, M_ser__D_e
M_dad_2_e	M_dhap_c, M_g3p_c	M_2dr1p_c, M_2dr5p_c	M_hxan_c	M_2dr5p_c, M_ade_c, M_g3p_c, M_h_c, M_h_e, M_iasp_c, M_nh4_c, M_pi_c	M_ade_c, M_dad_2_c, M_g3p_c, M_h2o_c, M_h_e, M_iasp_c
M_dad_2_e	M_dhap_c, M_g3p_c	M_2dr1p_c, M_2dr5p_c	M_nh4_c	M_2dr5p_c, M_ade_c, M_g3p_c, M_h_c, M_h_e, M_hxan_c, M_iasp_c, M_pi_c	M_ade_c, M_dad_2_c, M_g3p_c, M_h2o_c, M_h_e, M_hxan_c, M_iasp_c
M_dad_2_e	M_iasp_c	M_2dr1p_c, M_2dr5p_c	M_hxan_c	M_2dr5p_c, M_ade_c, M_dhap_c, M_g3p_c, M_h_c, M_h_e, M_nh4_c, M_pi_c	M_ade_c, M_dad_2_c, M_dhap_c, M_g3p_c, M_h2o_c, M_h_e
M_dad_2_e	M_iasp_c	M_2dr1p_c, M_2dr5p_c	M_nh4_c	M_2dr5p_c, M_ade_c, M_dhap_c, M_g3p_c, M_h_c, M_h_e, M_hxan_c, M_pi_c	M_ade_c, M_dad_2_c, M_dhap_c, M_g3p_c, M_h2o_c, M_h_e
M_dhap_c, M_g3p_c	M_h_e	M_2dr1p_c, M_2dr5p_c	M_hxan_c	M_2dr5p_c, M_ade_c, M_dad_2_c, M_dad_2_e, M_g3p_c, M_h2o_c, M_iasp_c	M_2dr5p_c, M_ade_c, M_dad_2_e, M_g3p_c, M_h_c, M_iasp_c, M_nh4_c, M_pi_c
M_dhap_c, M_g3p_c	M_h_e	M_2dr1p_c, M_2dr5p_c	M_nh4_c	M_2dr5p_c, M_ade_c, M_dad_2_c, M_dad_2_e, M_g3p_c, M_h2o_c, M_hxan_c, M_iasp_c	M_2dr5p_c, M_ade_c, M_dad_2_e, M_g3p_c, M_h_c, M_hxan_c, M_iasp_c, M_pi_c
M_h_e	M_iasp_c	M_2dr1p_c, M_2dr5p_c	M_hxan_c	M_2dr5p_c, M_ade_c, M_dad_2_e, M_dhap_c, M_g3p_c, M_h_c, M_nh4_c, M_pi_c	M_ade_c, M_dad_2_c, M_dad_2_e, M_dhap_c, M_g3p_c, M_h2o_c
M_h_e	M_iasp_c	M_2dr1p_c, M_2dr5p_c	M_nh4_c	M_2dr5p_c, M_ade_c, M_dad_2_e, M_dhap_c, M_g3p_c, M_h_c, M_hxan_c, M_pi_c	M_ade_c, M_dad_2_c, M_dad_2_e, M_dhap_c, M_g3p_c, M_h2o_c
M_h2o_c	M_h_e	M_glu__L_c	M_h2co3_c	M_4abut_c, M_akg_c, M_akg_e, M_cpppg3_c, M_gln__L_c, M_hco3_c	M_4abut_c, M_akg_c, M_co2_c, M_cpppg3_c, M_glu__L_e
M_h2o_c	M_h_e	M_asp__L_c, M_fum_c, M_nh4_c	M_h2co3_c	M_ala_B_c, M_asn__L_c, M_fum_c, M_fum_e, M_hco3_c	M_ala_B_c, M_asp__L_e, M_co2_c
M_2ahhmp_c, M_dhnpt_c, M_gcald_c, M_h_c	M_h_e	M_amp_c	M_glyclt_c	M_2ahhmd_c, M_adp_c, M_atp_c, M_gcald_c, M_h_c, M_nad_c, M_nadh_c, M_nadp_c, M_pi_c	M_2ahhmp_c, M_adp_c, M_h2o_c, M_h_c, M_nad_c, M_nadh_c, M_nadp_c, M_pi_c
M_2ahhmp_c, M_dhnpt_c, M_gcald_c, M_h_c	M_h_e	M_amp_c	M_nadh_c	M_2ahhmd_c, M_adp_c, M_atp_c, M_gcald_c, M_glyclt_c, M_h_c, M_nad_c, M_nadp_c, M_pi_c	M_2ahhmp_c, M_adp_c, M_glyclt_c, M_h2o_c, M_h_c, M_nad_c, M_nadp_c, M_pi_c

M_2ahhmp_c, M_dhnpt_c, M_gcald_c, M_h_c	M_pi_c	M_amp_c	M_glyclt_c	M_2ahhmd_c, M_adp_c, M_atp_c, M_gcald_c, M_h_c, M_h_e, M_nad_c, M_nadh_c, M_nadp_c	M_2ahhmp_c, M_adp_c, M_h2o_c, M_h_c, M_h_e, M_nad_c
M_2ahhmp_c, M_dhnpt_c, M_gcald_c, M_h_c	M_pi_c	M_amp_c	M_nadh_c	M_2ahhmd_c, M_adp_c, M_atp_c, M_gcald_c, M_glyclt_c, M_h_c, M_h_e, M_nad_c, M_nadp_c	M_2ahhmp_c, M_adp_c, M_glyclt_c, M_h2o_c, M_h_c, M_h_e, M_nad_c
M_atp_c	M_nad_c	M_13dpg_c	M_6pgl_c	M_3pg_c, M_3php_c, M_adp_c, M_f6p_c, M_g3p_c, M_g6p_c	M_3php_c, M_adp_c, M_f6p_c, M_g3p_c, M_glc__D_c, M_h_c, M_nadh_c, M_nadp_c, M_nadph_c, M_pi_c
M_h_e	M_mqn6_c	M_acald_c	M_orot_c	M_asn__L_c, M_asn__L_e, M_co2_c, M_dhor__S_c, M_lac__D_c, M_lac__L_c, M_lac__L_e, M_mql6_c, M_pyr_c	M_asn__L_c, M_asn__L_e, M_co2_c, M_h_c, M_lac__D_c, M_lac__L_c, M_lac__L_e, M_mql6_c, M_orot_e
M_h_e	M_mqn6_c	M_co2_c	M_orot_c	M_acald_c, M_acald_e, M_asn__L_c, M_asn__L_e, M_dhor__S_c, M_lac__D_c, M_lac__L_c, M_lac__L_e, M_mql6_c, M_pyr_c	M_acald_c, M_acald_e, M_asn__L_c, M_asn__L_e, M_h_c, M_lac__D_c, M_lac__L_c, M_lac__L_e, M_mql6_c, M_orot_e
M_h_e	M_pphn_c	M_34hpp_c	M_h2co3_c	M_4abut_c, M_akg_c, M_co2_c, M_glu__L_c, M_h_c, M_nadh_c, M_phpyr_c, M_tyr__L_e	M_4abut_c, M_co2_c, M_glu__L_c, M_hco3_c, M_nad_c, M_nadh_c, M_phpyr_c, M_tyr__L_c, M_tyr__L_e
M_h_e	M_uacgam_c	M_udcpp_c	M_utp_c	M_adp_c, M_atp_c, M_h_c, M_peptido_EC_c, M_pi_c, M_uaagmda_c, M_uagmda_c, M_udcpdp_c	M_adp_c, M_h2o_c, M_h_c, M_peptido_EC_c, M_pi_c, M_uagmda_c, M_udp_c
M_h_e	M_uagmda_c	M_udcpp_c	M_utp_c	M_adp_c, M_atp_c, M_h_c, M_peptido_EC_c, M_pi_c, M_uaagmda_c, M_uacgam_c, M_udcpdp_c	M_adp_c, M_h2o_c, M_h_c, M_peptido_EC_c, M_pi_c, M_uacgam_c, M_udp_c
M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_icit_c	M_h2co3_c	M_pro__L_c	M_1pyr5c_c, M_4abut_c, M_akg_c, M_co2_c, M_h_c, M_nadp_c	M_4abut_c, M_akg_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c
M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_icit_c	M_hco3_c	M_pro__L_c	M_1pyr5c_c, M_4abut_c, M_akg_c, M_co2_c, M_h2co3_c, M_h_c, M_nadp_c	M_4abut_c, M_akg_c, M_h2co3_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c
M_h2o_c	M_h_e	M_co2_c	M_mal__L_c	M_ala_B_c, M_fum_e, M_h2co3_c, M_h_c, M_hco3_c, M_mal__L_e, M_nh4_c, M_urea_c	M_asp__L_c, M_asp__L_e, M_fum_c, M_fum_e, M_h2co3_c, M_hco3_c, M_nh4_c

M_h2o_c	M_h_e	M_mal__L_c	M_nh4_c	M_ala_B_c, M_asp__L_e, M_co2_c, M_fum_c	M_ala_B_c, M_co2_c, M_fum_e, M_h2co3_c, M_h_c, M_hco3_c, M_mal__L_e, M_urea_c
M_arg__L_c	M_h_e	M_co2_c	M_orn_c	M_agm_c, M_h2co3_c, M_h_c, M_hco3_c, M_nh4_c, M_orn_e	M_agm_c, M_h2o_c, M_hco3_c, M_nh4_c, M_ptrc_c, M_ser__D_c, M_ser__D_e, M_urea_c
M_h_e	M_o2s_c	M_fe2_c	M_no3_c	M_adp_c, M_atp_c, M_fe2_e, M_no_c, M_no_e, M_o2_c, M_pi_c	M_atp_c, M_fe2_e, M_h_c, M_no3_e
M_h_e	M_o2s_c	M_hxan_c	M_no3_c	M_acac_c, M_acac_e, M_ade_c, M_ade_e, M_h2o2_c, M_h2o_c, M_nh4_c, M_no_c, M_o2_c	M_acac_c, M_acac_e, M_ade_c, M_ade_e, M_h_c, M_nh4_c, M_no3_e
M_h_e	M_o2s_c	M_nh4_c	M_no3_c	M_acac_c, M_acac_e, M_ade_c, M_ade_e, M_h2o2_c, M_h2o_c, M_hxan_c, M_no_c, M_o2_c	M_acac_c, M_acac_e, M_ade_c, M_ade_e, M_h_c, M_hxan_c, M_no3_e
M_atp_c	M_o2_c	M_h2co3_c	M_pi_c	M_adp_c, M_cpppg3_c, M_fad_c, M_fmn_c, M_hco3_c, M_ppp9_c, M_pppg9_c, M_ribflv_c	M_adp_c, M_cpppg3_c, M_fad_c, M_h2o_c, M_h_c, M_ppp9_c, M_pppg9_c, M_ribflv_c
M_h_e	M_nh4_c, M_pyr_c, M_ser__L_c	M_co2_c	M_gly_c	M_acald_c, M_h2co3_c, M_h2o_c, M_hco3_c, M_mlthf_c, M_nh4_c, M_pyr_c, M_ser__D_c, M_ser__D_e, M_thf_c	M_gly_e, M_h2co3_c, M_h2o_c, M_h_c
M_h_e	M_nh4_c, M_pyr_c, M_ser__L_c	M_gly_c	M_h2co3_c	M_acald_c, M_gly_e, M_h2o_c, M_h_c	M_acald_c, M_h2o_c, M_hco3_c, M_mlthf_c, M_nh4_c, M_pyr_c, M_ser__D_c, M_ser__D_e, M_thf_c
M_h_e	M_nh4_c, M_pyr_c, M_ser__L_c	M_gly_c	M_hco3_c	M_acald_c, M_gly_e, M_h2co3_c, M_h2o_c, M_h_c	M_acald_c, M_h2co3_c, M_h2o_c, M_mlthf_c, M_nh4_c, M_pyr_c, M_ser__D_c, M_ser__D_e, M_thf_c
M_h2o_c	M_h_e	M_h2co3_c	M_ser__D_c	M_4abut_c, M_akg_c, M_co2_c, M_glu__L_c, M_glu__L_e, M_h_c, M_phe__L_c, M_phpyr_c, M_pi_c, M_ser__D_e	M_4abut_c, M_akg_c, M_glu__L_c, M_glu__L_e, M_hco3_c, M_phe__L_c, M_phpyr_c, M_pi_c, M_pser__D_c
M_gdpddman_c, M_gdpmann_c, M_h2o_c	M_mlthf_c	M_10fthf_c	M_gdpfuc_c	M_for_c, M_gdpddman_c, M_h_c, M_methf_c, M_nadp_c	M_for_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c
M_gdpddman_c, M_gdpmann_c, M_h2o_c	M_mlthf_c	M_for_c	M_gdpfuc_c	M_10fthf_c, M_gdpddman_c, M_h_c, M_methf_c, M_nadp_c	M_h2o_c, M_h_c, M_nadp_c, M_nadph_c
M_gdpddman_c, M_gdpmann_c, M_h2o_c	M_mlthf_c	M_gdpfuc_c	M_thf_c	M_for_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c	M_gdpddman_c, M_h_c, M_methf_c, M_nadp_c

M_25aics_c, M_aicar_c, M_fum_c	M_h2o_c	M_fprica_c	M_h_c	M_10fthf_c	M_aicar_c, M_for_c, M_for_e, M_fum_e, M_h_e, M_imp_c
M_h_e	M_o2s_c	M_hco3_c	M_no3_c	M_acald_c, M_h2co3_c, M_h2o2_c, M_h2o_c, M_h_c, M_no_c, M_o2_c, M_pyr_e	M_co2_c, M_h2co3_c, M_h_c, M_no3_e
M_adn_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_co2_c	M_nh4_c	M_ade_c, M_adn_c, M_cpppg3_c, M_h2co3_c, M_h_e, M_hco3_c, M_hxan_c, M_ppbng_c, M_rib__D_c, M_uppg3_c	M_cpppg3_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e
M_adn_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_co2_c	M_rib__D_c	M_ade_c, M_adn_c, M_cpppg3_c, M_h2co3_c, M_h_e, M_hco3_c, M_hxan_c, M_nh4_c, M_ppbng_c, M_uppg3_c	M_ade_c, M_cpppg3_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e, M_hco3_c, M_hxan_c, M_nh4_c
M_adn_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_cpppg3_c	M_nh4_c	M_ade_c, M_adn_c, M_h2co3_c, M_h_e, M_hco3_c, M_hxan_c, M_ppbng_c, M_rib__D_c, M_uppg3_c	M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e, M_hco3_c
M_adn_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_cpppg3_c	M_rib__D_c	M_ade_c, M_adn_c, M_h2co3_c, M_h_e, M_hco3_c, M_hxan_c, M_nh4_c, M_ppbng_c, M_uppg3_c	M_ade_c, M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e, M_hco3_c, M_hxan_c, M_nh4_c
M_adn_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_h2co3_c	M_nh4_c	M_ade_c, M_adn_c, M_cpppg3_c, M_h_e, M_hco3_c, M_hxan_c, M_ppbng_c	M_cpppg3_c, M_h2o_c, M_h_c, M_h_e
M_adn_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_h2co3_c	M_rib__D_c	M_ade_c, M_adn_c, M_cpppg3_c, M_h_e, M_hco3_c	M_ade_c, M_cpppg3_c, M_h2o_c, M_h_c, M_h_e, M_hxan_c, M_nh4_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_h_e	M_ade_c	M_co2_c	M_adn_c, M_adn_e, M_cpppg3_c, M_h2co3_c, M_hco3_c, M_hxan_c, M_nh4_c, M_ppbng_c, M_rib__D_c, M_uppg3_c	M_adn_e, M_cpppg3_c, M_h2co3_c, M_h2o_c, M_h_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_h_e	M_ade_c	M_cpppg3_c	M_adn_c, M_adn_e, M_h2co3_c, M_hco3_c, M_hxan_c, M_nh4_c, M_ppbng_c, M_rib__D_c, M_uppg3_c	M_adn_e, M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_h_e	M_ade_c	M_h2co3_c	M_adn_c, M_adn_e, M_cpppg3_c, M_hco3_c	M_adn_e, M_cpppg3_c, M_h2o_c, M_h_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_h_e	M_co2_c	M_nh4_c	M_adn_e, M_cpppg3_c, M_h2co3_c, M_h2o_c, M_h_c	M_adn_e, M_cpppg3_c, M_h2co3_c, M_hco3_c, M_hxan_c, M_ppbng_c, M_rib__D_c, M_uppg3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_h_e	M_co2_c	M_rib__D_c	M_ade_c, M_adn_e, M_cpppg3_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_hxan_c, M_nh4_c	M_adn_c, M_adn_e, M_cpppg3_c, M_h2co3_c, M_hco3_c, M_hxan_c, M_nh4_c, M_ppbng_c, M_uppg3_c

M_h2o_c, M_hmbil_c, M_uppg3_c	M_h_e	M_cpppg3_c	M_nh4_c	M_adn_e, M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c	M_adn_e, M_h2co3_c, M_hco3_c, M_hxan_c, M_ppbng_c, M_rib__D_c, M_uppg3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_h_e	M_cpppg3_c	M_rib__D_c	M_ade_c, M_adn_e, M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_hxan_c, M_nh4_c	M_adn_c, M_adn_e, M_h2co3_c, M_hco3_c, M_hxan_c, M_nh4_c, M_ppbng_c, M_uppg3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_h_e	M_h2co3_c	M_nh4_c	M_adn_e, M_cpppg3_c, M_h2o_c, M_h_c	M_adn_e, M_cpppg3_c, M_hco3_c, M_hxan_c, M_ppbng_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_h_e	M_h2co3_c	M_rib__D_c	M_ade_c, M_adn_e, M_cpppg3_c, M_h2o_c, M_h_c, M_hxan_c, M_nh4_c	M_adn_c, M_adn_e, M_cpppg3_c, M_hco3_c
M_duri_c	M_h2o_c	M_2dr1p_c, M_2dr5p_c	M_dump_c	M_2dr5p_c, M_adp_c, M_dudp_c, M_dutp_c, M_gua_c, M_h_c, M_pi_c	M_2dr5p_c, M_atp_c, M_dgsn_c, M_gua_c, M_h_c, M_ppi_c
M_h_e	M_nh4_c, M_pyr_c, M_ser__L_c	M_acald_c	M_gly_c	M_gal_c, M_gal_e, M_h2co3_c, M_h2o_c, M_hco3_c, M_mlthf_c, M_nh4_c, M_pyr_c, M_thf_c	M_gal_c, M_gly_e, M_h2co3_c, M_h2o_c, M_h_c
M_h2o2_c, M_h2o_c, M_o2_c	M_lac__D_c	M_h2co3_c	M_h_e	M_acald_c, M_co2_c, M_ficytcc553_c, M_h_c, M_mqn6_c	M_acald_c, M_focytcc553_c, M_h2o_c, M_h_c, M_mql6_c, M_mqn6_c
M_h2o2_c, M_h2o_c, M_o2_c	M_lac__D_c	M_h_e	M_hco3_c	M_acald_c, M_focytcc553_c, M_h2co3_c, M_h2o_c, M_h_c, M_mql6_c, M_mqn6_c	M_co2_c, M_ficytcc553_c, M_h2co3_c, M_h_c, M_mqn6_c
M_h2o2_c, M_h2o_c, M_o2_c	M_mqn6_c	M_h2co3_c	M_h_e	M_acald_c, M_co2_c, M_ficytcc553_c, M_h_c, M_lac__D_c	M_acald_c, M_focytcc553_c, M_h2o_c, M_h_c, M_lac__D_c
M_h2o2_c, M_h2o_c, M_o2_c	M_mqn6_c	M_h_e	M_hco3_c	M_acald_c, M_focytcc553_c, M_h2co3_c, M_h2o_c, M_h_c, M_lac__D_c	M_co2_c, M_ficytcc553_c, M_h2co3_c, M_h_c, M_lac__D_c
M_lac__D_c	M_o2s_c	M_h2co3_c	M_h_e	M_acald_c, M_focytcc553_c, M_h2o_c, M_h_c, M_mql6_c, M_mqn6_c	M_co2_c, M_ficytcc553_c, M_h_c, M_mqn6_c
M_lac__D_c	M_o2s_c	M_h_e	M_hco3_c	M_acald_c, M_co2_c, M_ficytcc553_c, M_h2co3_c, M_h_c, M_mqn6_c	M_acald_c, M_focytcc553_c, M_h2co3_c, M_h2o_c, M_h_c, M_mql6_c, M_mqn6_c
M_mqn6_c	M_o2s_c	M_h2co3_c	M_h_e	M_acald_c, M_focytcc553_c, M_h2o_c, M_h_c, M_lac__D_c	M_co2_c, M_ficytcc553_c, M_h_c, M_lac__D_c
M_mqn6_c	M_o2s_c	M_h_e	M_hco3_c	M_acald_c, M_co2_c, M_ficytcc553_c, M_h2co3_c, M_h_c, M_lac__D_c	M_acald_c, M_focytcc553_c, M_h2co3_c, M_h2o_c, M_h_c, M_lac__D_c

M_gsn_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_co2_c	M_gua_c	M_cpppg3_c, M_gsn_c, M_h2co3_c, M_h_e, M_hco3_c, M_nh4_c, M_ppbng_c, M_rib__D_c, M_uppg3_c	M_cpppg3_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e
M_gsn_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_co2_c	M_rib__D_c	M_cpppg3_c, M_gsn_c, M_gua_c, M_h2co3_c, M_h_e, M_hco3_c, M_nh4_c, M_ppbng_c, M_uppg3_c	M_cpppg3_c, M_gua_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e
M_gsn_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_cpppg3_c	M_gua_c	M_gsn_c, M_h2co3_c, M_h_e, M_hco3_c, M_nh4_c, M_ppbng_c, M_rib__D_c, M_uppg3_c	M_h2co3_c, M_h2o_c, M_h_c, M_h_e
M_gsn_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_cpppg3_c	M_rib__D_c	M_gsn_c, M_gua_c, M_h2co3_c, M_h_e, M_hco3_c, M_nh4_c, M_ppbng_c, M_uppg3_c	M_gua_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e
M_gsn_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_gua_c	M_h2co3_c	M_cpppg3_c, M_h2o_c, M_h_c, M_h_e	M_gsn_c, M_h_e, M_hco3_c
M_gsn_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_h2co3_c	M_rib__D_c	M_cpppg3_c, M_gsn_c, M_gua_c, M_h_e, M_hco3_c	M_cpppg3_c, M_gua_c, M_h2o_c, M_h_c, M_h_e
M_h2o_c, M_hmbil_c, M_uppg3_c	M_h_e	M_co2_c	M_gua_c	M_cpppg3_c, M_gsn_e, M_h2co3_c, M_h2o_c, M_h_c	M_gsn_c, M_gsn_e, M_h2co3_c, M_hco3_c, M_nh4_c, M_ppbng_c, M_rib__D_c, M_uppg3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_h_e	M_cpppg3_c	M_gua_c	M_co2_c, M_gsn_e, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c	M_gsn_c, M_gsn_e, M_h2co3_c, M_hco3_c, M_nh4_c, M_ppbng_c, M_rib__D_c, M_uppg3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_h_e	M_gua_c	M_h2co3_c	M_cpppg3_c, M_gsn_c, M_gsn_e, M_hco3_c	M_cpppg3_c, M_gsn_e, M_h2o_c, M_h_c
M_h2s_c	M_h_e	M_ac_c	M_succ_c	M_2obut_c, M_acser_c, M_cys__L_c, M_cyst__L_c, M_h2o_c, M_h_c, M_hcys__L_c, M_nh4_c, M_succ_e	M_ac_e, M_cyst__L_c, M_h_c, M_hcys__L_c, M_nh4_c, M_suchms_c
M_atp_c	M_dhptd_c, M_h2o_c, M_hmfurn_c	M_pa_Hp_c	M_pi_c	M_12dgr_HP_c, M_adp_c, M_cdp_c, M_cmp_c, M_ctp_c, M_h_c, M_hmfurn_c, M_nh4_c, M_ppi_c	M_adp_c, M_cdp_c, M_cdpdag_HP_c, M_cmp_c, M_h_c, M_hmfurn_c, M_nh4_c, M_utp_c
M_h2o_c	M_h_e	M_h2co3_c	M_nh4_c, M_pyr_c, M_ser__L_c	M_acald_c, M_acald_e, M_co2_c, M_h_c, M_mal__L_c, M_mal__L_e, M_nh4_c, M_pi_c, M_pyr_c, M_ser__L_e	M_acald_c, M_acald_e, M_hco3_c, M_mal__L_c, M_mal__L_e, M_nh4_c, M_pi_c, M_pser__L_c

M_arg__L_c, M_argsuc_c, M_fum_c	M_h_e	M_agm_c	M_succ_c	M_adn_c, M_adn_e, M_co2_c, M_fum_c, M_fum_e, M_h2_e, M_h_c, M_succ_e	M_adn_c, M_arg__L_c, M_arg__L_e, M_co2_c, M_fum_e, M_h2_e, M_mql6_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_h_e	M_agm_c	M_succ_e	M_adn_c, M_adn_e, M_co2_c, M_fum_c, M_h2_e, M_h_c, M_succ_c	M_adn_c, M_arg__L_c, M_arg__L_e, M_co2_c, M_fum_e, M_h2_e, M_mql6_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_h_e	M_co2_c	M_succ_c	M_adn_c, M_adn_e, M_agm_c, M_fum_c, M_fum_e, M_h2_e, M_h_c, M_succ_e	M_adn_c, M_adn_e, M_arg__L_c, M_arg__L_e, M_fum_e, M_h2_e, M_mql6_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_h_e	M_co2_c	M_succ_e	M_adn_c, M_adn_e, M_agm_c, M_fum_c, M_h2_e, M_h_c, M_succ_c	M_adn_c, M_adn_e, M_arg__L_c, M_arg__L_e, M_fum_e, M_h2_e, M_mql6_c
M_ade_e	M_pi_c	M_btamp_c	M_hxan_c	M_2dr1p_c, M_2dr5p_c, M_ade_c, M_atp_c, M_btn_c, M_din_c, M_h_e	M_2dr1p_c, M_2dr5p_c, M_adp_c, M_btn_c, M_h2o_c, M_h_c, M_h_e
M_ade_e	M_pi_c	M_hxan_c	M_ppi_c	M_2dr1p_c, M_2dr5p_c, M_adp_c, M_btamp_c, M_btn_c, M_h2o_c, M_h_c, M_h_e	M_2dr1p_c, M_2dr5p_c, M_atp_c, M_btamp_c, M_btn_c, M_din_c, M_h_e
M_duri_c	M_h_e	M_dudp_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_adp_c, M_atp_c, M_dutp_c, M_h_c, M_ppi_c, M_ura_e	M_2dr1p_c, M_2dr5p_c, M_adp_c, M_dump_c, M_dutp_c, M_h2o_c, M_h_c, M_pi_c, M_ppi_c
M_duri_c	M_h_e	M_dump_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_adp_c, M_atp_c, M_dudp_c, M_dutp_c, M_h_c, M_ppi_c, M_ura_e	M_2dr1p_c, M_2dr5p_c, M_adp_c, M_dudp_c, M_dutp_c, M_h_c, M_pi_c
M_duri_c	M_h_e	M_dutp_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_adp_c, M_atp_c, M_h_c, M_ppi_c, M_ura_e	M_2dr1p_c, M_2dr5p_c, M_adp_c, M_dudp_c, M_dump_c, M_h2o_c, M_h_c, M_pi_c
M_h_e	M_nh4_c, M_pyr_c, M_ser__L_c	M_acald_c	M_trp__L_c	M_h2co3_c, M_h2o_c, M_hco3_c, M_indole_c, M_nh4_c, M_no3_c, M_no3_e, M_pyr_c	M_h2co3_c, M_h_c, M_hco3_c, M_nh4_c, M_no3_c, M_no3_e, M_trp__L_e
M_h_e	M_nh4_c, M_pyr_c, M_ser__L_c	M_co2_c	M_trp__L_c	M_acald_c, M_h2co3_c, M_h2o_c, M_hco3_c, M_indole_c, M_nh4_c, M_no3_c, M_no3_e, M_pyr_c	M_acald_c, M_h2co3_c, M_h_c, M_hco3_c, M_nh4_c, M_no3_c, M_no3_e, M_trp__L_e
M_h_e	M_nh4_c, M_pyr_c, M_ser__L_c	M_h2co3_c	M_trp__L_c	M_acald_c, M_h2o_c, M_hco3_c, M_indole_c, M_nh4_c, M_no3_c	M_h2o_c, M_h_c, M_nh4_c, M_no3_c, M_no3_e, M_trp__L_e
M_h_e	M_nh4_c, M_pyr_c, M_ser__L_c	M_hco3_c	M_trp__L_c	M_acald_c, M_h2co3_c, M_h2o_c, M_indole_c, M_nh4_c, M_no3_c, M_no3_e, M_pyr_c	M_acald_c, M_h2o_c, M_h_c, M_nh4_c, M_no3_c, M_no3_e, M_trp__L_e
M_ade_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_co2_c	M_nh4_c	M_ade_c, M_cpppg3_c, M_h2co3_c, M_h_e, M_hco3_c, M_hxan_c, M_ppbng_c, M_tyr__L_c, M_uppg3_c	M_cpppg3_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e

M_ade_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_cpppg3_c	M_nh4_c	M_ade_c, M_h2co3_c, M_h_e, M_hco3_c, M_hxan_c, M_ppbng_c, M_tyr__L_c, M_uppg3_c	M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e, M_hco3_c
M_ade_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_h2co3_c	M_nh4_c	M_ade_c, M_cpppg3_c, M_h_e, M_hco3_c, M_hxan_c, M_ppbng_c	M_cpppg3_c, M_h2o_c, M_h_c, M_h_e
M_3php_c	M_h2o2_c, M_h2o_c, M_o2_c	M_glx_c	M_nh4_c, M_pyr_c, M_ser__L_c	M_e4hglu_c, M_glu__L_c, M_nh4_c, M_o2_c, M_pi_c, M_pser__L_c	M_glu__L_c, M_glyclt_c, M_h2o_c
M_3php_c	M_h2o2_c, M_h2o_c, M_o2_c	M_glx_c	M_pi_c	M_e4hglu_c, M_glu__L_c, M_nh4_c, M_o2_c, M_pser__L_c	M_glu__L_c, M_glyclt_c, M_h2o_c
M_glu__L_c	M_h2o2_c, M_h2o_c, M_o2_c	M_glx_c	M_nh4_c, M_pyr_c, M_ser__L_c	M_3php_c, M_e4hglu_c, M_nh4_c, M_o2_c, M_pi_c, M_pser__L_c	M_3php_c, M_glyclt_c, M_h2o_c
M_glu__L_c	M_h2o2_c, M_h2o_c, M_o2_c	M_glx_c	M_pi_c	M_3php_c, M_e4hglu_c, M_nh4_c, M_o2_c, M_pser__L_c	M_3php_c, M_glyclt_c, M_h2o_c
M_h_e	M_orot5p_c	M_co2_c	M_xmp_c	M_amet_c, M_ametam_c, M_orot_c, M_ppi_c, M_ump_c, M_xan_c, M_xan_e	M_ametam_c, M_h_c, M_orot_c, M_ppi_c, M_prpp_c, M_ump_c, M_xan_e
M_h2o_c	M_h_e	M_mal__L_c	M_pi_c	M_atp_c, M_fe2_c, M_fum_c, M_fum_e, M_h_c, M_pi_e	M_atp_c, M_fe2_e, M_fum_e, M_h_c, M_mal__L_e
M_h2o_c	M_h_e	M_mal__L_c	M_ser__D_c	M_fum_c, M_fum_e, M_glc__D_c, M_glc__D_e, M_h_c, M_orot_c, M_orot_e, M_pi_c, M_ser__D_e	M_fum_e, M_glc__D_c, M_glc__D_e, M_h_c, M_mal__L_e, M_orot_c, M_orot_e, M_pi_c, M_pser__D_c
M_5mdru1p_c, M_dkmpp_c, M_h2o_c	M_h_e	M_h2co3_c	M_succ_c	M_26dap_LL_c, M_26dap__M_c, M_co2_c, M_dkmpp_c, M_h_c, M_lys__L_c, M_lys__L_e, M_succ_e	M_26dap_LL_c, M_26dap__M_c, M_dkmpp_c, M_hco3_c, M_lys__L_c, M_lys__L_e, M_sl26da_c
M_2mecdp_c, M_2p4c2me_c, M_cmp_c	M_ps_HP_c	M_12dgr_HP_c	M_h2co3_c	M_2mecdp_c, M_akg_c, M_cdpea_c, M_h2mb4p_c, M_h2o_c, M_h_c, M_pe_HP_c	M_akg_c, M_cdpea_c, M_cmp_c, M_co2_c, M_h2mb4p_c, M_h_c
M_2mecdp_c, M_2p4c2me_c, M_cmp_c	M_ps_HP_c	M_12dgr_HP_c	M_hco3_c	M_2mecdp_c, M_akg_c, M_cdpea_c, M_h2co3_c, M_h2mb4p_c, M_h2o_c, M_h_c, M_pe_HP_c	M_akg_c, M_cdpea_c, M_cmp_c, M_co2_c, M_h2co3_c, M_h2mb4p_c, M_h_c

M_2mecdp_c, M_2p4c2me_c, M_cmp_c	M_ps_HP_c	M_cdpea_c	M_h2co3_c	M_12dgr_HP_c, M_2mecdp_c, M_akg_c, M_h2mb4p_c, M_h2o_c, M_h_c, M_pe_HP_c	M_12dgr_HP_c, M_akg_c, M_cmp_c, M_co2_c, M_h2mb4p_c, M_h_c
M_2mecdp_c, M_2p4c2me_c, M_cmp_c	M_ps_HP_c	M_cdpea_c	M_hco3_c	M_12dgr_HP_c, M_2mecdp_c, M_akg_c, M_h2co3_c, M_h2mb4p_c, M_h2o_c, M_h_c, M_pe_HP_c	M_12dgr_HP_c, M_akg_c, M_cmp_c, M_co2_c, M_h2co3_c, M_h2mb4p_c, M_h_c
M_akg_c	M_pphn_c	M_34hpp_c	M_phpyr_c	M_4abut_c, M_co2_c, M_glu__L_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_nadh_c, M_tyr__L_c	M_4abut_c, M_co2_c, M_glu__L_c, M_h2co3_c, M_hco3_c, M_nad_c, M_nadh_c, M_phe__L_c
M_asp__L_c, M_fum_c, M_nh4_c	M_o2_c	M_co2_c	M_mal__L_c	M_ala_B_c, M_fe2_c, M_fum_c, M_h2co3_c, M_h_c, M_hco3_c, M_nh4_c, M_pheme_c, M_ppp9_c, M_pppg9_c	M_cpppg3_c, M_fe2_c, M_h2co3_c, M_h2o_c, M_hco3_c, M_nh4_c, M_pheme_c, M_pppg9_c
M_asp__L_c, M_fum_c, M_nh4_c	M_pppg9_c	M_co2_c	M_mal__L_c	M_ala_B_c, M_fe2_c, M_fum_c, M_h2co3_c, M_h_c, M_hco3_c, M_nh4_c, M_o2_c	M_cpppg3_c, M_fe2_c, M_h2co3_c, M_h2o_c, M_hco3_c, M_nh4_c, M_o2_c
M_atp_c	M_h2o_c	M_amp_c	M_dutp_c	M_2ahhmd_c, M_2ahhmp_c, M_adp_c, M_dctp_c, M_h_c	M_2ahhmd_c, M_adp_c, M_dctp_c, M_dudp_c, M_dump_c, M_nh4_c, M_nh4_e, M_pap_c
M_3ig3p_c, M_g3p_c, M_indole_c	M_h_e	M_dxyl5p_c	M_h2o_c	M_acald_c, M_co2_c, M_h2co3_c, M_h_c, M_hco3_c, M_indole_c, M_nh4_c, M_pyr_c, M_ser__L_e	M_acald_c, M_g3p_c, M_h2co3_c, M_hco3_c, M_nh4_c, M_pyr_c, M_ser__L_c, M_ser__L_e
M_3ig3p_c, M_g3p_c, M_indole_c	M_h_e	M_dxyl5p_c	M_trp__L_c	M_acald_c, M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_indole_c, M_nh4_c, M_pyr_c, M_ser__L_e	M_acald_c, M_g3p_c, M_h2co3_c, M_h2o_c, M_hco3_c, M_nh4_c, M_pyr_c, M_ser__L_c, M_ser__L_e
M_3ig3p_c, M_g3p_c, M_indole_c	M_ser__L_e	M_dxyl5p_c	M_h2o_c	M_acald_c, M_co2_c, M_h2co3_c, M_h_c, M_h_e, M_hco3_c, M_indole_c, M_nh4_c, M_pyr_c	M_acald_c, M_g3p_c, M_h2co3_c, M_h_e, M_hco3_c, M_nh4_c, M_pyr_c, M_ser__L_c
M_3ig3p_c, M_g3p_c, M_indole_c	M_ser__L_e	M_dxyl5p_c	M_trp__L_c	M_acald_c, M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e, M_hco3_c, M_indole_c, M_nh4_c, M_pyr_c	M_acald_c, M_g3p_c, M_h2co3_c, M_h2o_c, M_h_e, M_hco3_c, M_nh4_c, M_pyr_c, M_ser__L_c
M_h2o_c	M_h_e	M_h2co3_c	M_succ_e	M_26dap_LL_c, M_26dap__M_c, M_co2_c, M_fum_c, M_h_c, M_lys__L_c, M_mal__L_c, M_sl26da_c, M_succ_c	M_26dap_LL_c, M_26dap__M_c, M_fum_c, M_fum_e, M_hco3_c, M_lys__L_c, M_mal__L_c, M_sl26da_c
M_h_e	M_sl26da_c	M_co2_c	M_succ_e	M_26dap_LL_c, M_26dap__M_c, M_fum_c, M_fum_e, M_h2co3_c, M_h2o_c, M_hco3_c, M_lys__L_c, M_mal__L_c	M_fum_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_lys__L_c, M_mal__L_c, M_succ_c

M_h_e	M_sl26da_c	M_h2co3_c	M_succ_e	M_26dap_LL_c, M_26dap__M_c, M_fum_c, M_fum_e, M_h2o_c, M_hco3_c, M_lys__L_c, M_mal__L_c	M_fum_c, M_h2o_c, M_h_c, M_lys__L_c, M_mal__L_c, M_succ_c
M_h_e	M_sl26da_c	M_hco3_c	M_succ_e	M_26dap_LL_c, M_26dap__M_c, M_fum_c, M_fum_e, M_h2co3_c, M_h2o_c, M_lys__L_c, M_mal__L_c	M_fum_c, M_h2co3_c, M_h2o_c, M_h_c, M_lys__L_c, M_mal__L_c, M_succ_c
M_h_e	M_sl26da_c	M_lys__L_c	M_succ_e	M_26dap_LL_c, M_26dap__M_c, M_fum_c, M_fum_e, M_h2co3_c, M_h2o_c, M_hco3_c, M_mal__L_c	M_co2_c, M_fum_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_mal__L_c, M_succ_c
M_h2o_c	M_h_e	M_ade_c	M_ala__D_c	M_acmam_c, M_adn_c, M_ala__D_e	M_acmama_c, M_ade_e
M_icit_c	M_phe__L_e	M_glu__L_c	M_mql6_c	M_4abut_c, M_co2_c, M_h_e, M_mqn6_c, M_nadp_c, M_nadph_c, M_phe__L_c	M_akg_c, M_co2_c, M_h_c, M_h_e, M_mqn6_c, M_nadp_c
M_icit_c	M_phe__L_e	M_mql6_c	M_phpyr_c	M_4abut_c, M_akg_c, M_co2_c, M_glu__L_c, M_h_c, M_h_e, M_mqn6_c, M_nadp_c	M_4abut_c, M_co2_c, M_glu__L_c, M_h_e, M_mqn6_c, M_nadp_c, M_nadph_c, M_phe__L_c
M_3pg_c	M_e4hglu_c	M_acald_c	M_pser__L_c	M_3php_c, M_4abut_c, M_4h2oglt_c, M_akg_c, M_co2_c, M_glx_c, M_nad_c, M_nadh_c, M_pyr_c	M_4abut_c, M_akg_c, M_co2_c, M_glu__L_c, M_glx_c, M_h_c, M_nad_c
M_2dda7p_c, M_3dhq_c, M_3dhsk_c, M_h2o_c, M_pi_c	M_fmnh2_c	M_ribflv_c	M_skm_c	M_3dhsk_c, M_4pasp_c, M_e4p_c, M_fmn_c, M_h_c, M_nadp_c	M_4pasp_c, M_aspsa_c, M_e4p_c, M_h2o_c, M_h_c, M_nadp_c
M_3dhq_c, M_3dhsk_c, M_h2o_c	M_fmnh2_c	M_pi_c	M_skm_c	M_3dhsk_c, M_4pasp_c, M_e4p_c, M_fmn_c, M_h_c, M_nadp_c	M_4pasp_c, M_aspsa_c, M_e4p_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_fad_c	M_agm_c	M_succ_c	M_1pyr5c_c, M_co2_c, M_fum_c, M_fum_e, M_h_c, M_mqn6_c, M_pro__L_c	M_arg__L_c, M_co2_c, M_fum_e, M_mql6_c, M_mqn6_c, M_pro__L_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_fad_c	M_agm_c	M_succ_e	M_1pyr5c_c, M_co2_c, M_fum_c, M_fum_e, M_h_c, M_mqn6_c, M_pro__L_c	M_arg__L_c, M_co2_c, M_fum_e, M_mql6_c, M_mqn6_c, M_pro__L_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_fad_c	M_co2_c	M_succ_c	M_1pyr5c_c, M_agm_c, M_fum_c, M_fum_e, M_h_c, M_mqn6_c, M_pro__L_c	M_1pyr5c_c, M_arg__L_c, M_fum_e, M_mql6_c, M_mqn6_c, M_pro__L_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_fad_c	M_co2_c	M_succ_e	M_1pyr5c_c, M_agm_c, M_fum_c, M_fum_e, M_h_c, M_mqn6_c, M_pro__L_c	M_1pyr5c_c, M_arg__L_c, M_fum_e, M_mql6_c, M_mqn6_c, M_pro__L_c

M_arg__L_c, M_argsuc_c, M_fum_c	M_fadh2_c	M_agm_c	M_succ_c	M_1pyr5c_c, M_co2_c, M_fad_c, M_fum_c, M_fum_e, M_h_c, M_mqn6_c	M_arg__L_c, M_co2_c, M_fum_e, M_mql6_c, M_mqn6_c, M_pro__L_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_fadh2_c	M_agm_c	M_succ_e	M_1pyr5c_c, M_co2_c, M_fad_c, M_fum_c, M_fum_e, M_h_c, M_mqn6_c	M_arg__L_c, M_co2_c, M_fum_e, M_mql6_c, M_mqn6_c, M_pro__L_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_fadh2_c	M_co2_c	M_succ_c	M_1pyr5c_c, M_agm_c, M_fad_c, M_fum_c, M_fum_e, M_h_c, M_mqn6_c	M_1pyr5c_c, M_arg__L_c, M_fum_e, M_mql6_c, M_mqn6_c, M_pro__L_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_fadh2_c	M_co2_c	M_succ_e	M_1pyr5c_c, M_agm_c, M_fad_c, M_fum_c, M_fum_e, M_h_c, M_mqn6_c	M_1pyr5c_c, M_arg__L_c, M_fum_e, M_mql6_c, M_mqn6_c, M_pro__L_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_pro__L_c	M_agm_c	M_succ_c	M_1pyr5c_c, M_co2_c, M_fad_c, M_fum_c, M_fum_e, M_h_c, M_mqn6_c	M_arg__L_c, M_co2_c, M_fad_c, M_fadh2_c, M_fum_e, M_mql6_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_pro__L_c	M_agm_c	M_succ_e	M_1pyr5c_c, M_co2_c, M_fad_c, M_fum_c, M_fum_e, M_h_c, M_mqn6_c	M_arg__L_c, M_co2_c, M_fad_c, M_fadh2_c, M_fum_e, M_mql6_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_pro__L_c	M_co2_c	M_succ_c	M_1pyr5c_c, M_agm_c, M_fad_c, M_fum_c, M_fum_e, M_h_c, M_mqn6_c	M_1pyr5c_c, M_arg__L_c, M_fad_c, M_fadh2_c, M_fum_e, M_mql6_c
M_arg__L_c, M_argsuc_c, M_fum_c	M_pro__L_c	M_co2_c	M_succ_e	M_1pyr5c_c, M_agm_c, M_fad_c, M_fum_c, M_fum_e, M_h_c, M_mqn6_c	M_1pyr5c_c, M_arg__L_c, M_fad_c, M_fadh2_c, M_fum_e, M_mql6_c
M_glu__L_c	M_h_e	M_akg_c	M_co2_c	M_3php_c, M_4abut_c, M_acald_c, M_nh4_c, M_pser__L_c, M_pyr_c, M_ser__L_c, M_ser__L_e	M_4abut_c, M_acald_c, M_akg_e, M_h_c
M_cys__L_c	M_h_e	M_ala__D_c, M_ala__L_c	M_fum_c	M_ala__D_c, M_btn_c, M_cyst__L_c, M_dtbt_c, M_fum_e, M_h_c, M_na1_c, M_na1_e, M_succ_e	M_ala__L_e, M_btn_c, M_cyst__L_c, M_fum_e, M_h_c, M_na1_c, M_suchms_c
M_cys__L_c	M_h_e	M_ala__D_c, M_ala__L_c	M_succ_c	M_ala__D_c, M_btn_c, M_cyst__L_c, M_dtbt_c, M_fum_c, M_fum_e, M_h_c, M_na1_c, M_na1_e, M_succ_e	M_ala__L_e, M_btn_c, M_cyst__L_c, M_fum_c, M_fum_e, M_h_c, M_na1_c, M_suchms_c
M_cys__L_c	M_h_e	M_ala__D_c, M_ala__L_c	M_succ_e	M_ala__D_c, M_btn_c, M_cyst__L_c, M_dtbt_c, M_fum_c, M_h_c, M_na1_c, M_na1_e, M_succ_c	M_ala__L_e, M_btn_c, M_cyst__L_c, M_fum_c, M_fum_e, M_h_c, M_na1_c, M_suchms_c
M_h2o_c	M_h_e	M_2obut_c, M_nh4_c, M_thr__L_c	M_succ_c	M_2obut_c, M_h_c, M_nh4_c, M_orot_c, M_orot_e, M_phom_c, M_pi_c, M_succ_e	M_2obut_c, M_h_c, M_nh4_c, M_orot_c, M_orot_e, M_pi_c, M_suchms_c, M_thr__L_e
M_10fthf_c	M_h2o_c	M_fprica_c	M_h_c	M_adp_c, M_aicar_c, M_atp_c, M_fgam_c, M_for_c, M_ile__L_c, M_ile__L_e	M_adp_c, M_atp_c, M_fgam_c, M_gar_c, M_ile__L_c, M_imp_c

M_for_c	M_h2o_c	M_fprica_c	M_h_c	M_adp_c, M_aicar_c, M_atp_c, M_fgam_c, M_ile__L_c, M_ile__L_e, M_pi_c, M_thf_c	M_adp_c, M_aicar_c, M_atp_c, M_gar_c, M_ile__L_c, M_imp_c
M_h2o_c	M_h_e	M_4hpro_LT_c	M_ac_c	M_1p3h5c_c, M_4hglusa_c, M_ac_e, M_e4hglu_c, M_h_c, M_nad_c	M_1p3h5c_c, M_4hglusa_c, M_ad_c, M_ad_e, M_e4hglu_c, M_nadh_c, M_nh4_c, M_trp__L_c, M_trp__L_e
M_asp__L_c, M_fum_c, M_nh4_c	M_h_e	M_co2_c	M_succ_c	M_acald_c, M_ala_B_c, M_fum_c, M_fum_e, M_h2_e, M_h_c, M_nh4_c, M_succ_e	M_acald_c, M_ala_B_c, M_fum_e, M_h2_e, M_mql6_c, M_mqn6_c, M_nh4_c, M_pyr_c, M_pyr_e
M_asp__L_c, M_fum_c, M_nh4_c	M_h_e	M_co2_c	M_succ_e	M_acald_c, M_ala_B_c, M_fum_c, M_h2_e, M_h_c, M_nh4_c, M_succ_c	M_acald_c, M_ala_B_c, M_fum_e, M_h2_e, M_mql6_c, M_mqn6_c, M_nh4_c, M_pyr_c, M_pyr_e
M_h2o_c, M_hmbil_c, M_uppg3_c	M_suchms_c	M_co2_c	M_nh4_c	M_2obut_c, M_cpppg3_c, M_h2co3_c, M_h2o_c, M_h2s_c, M_h_c	M_2obut_c, M_cpppg3_c, M_h2co3_c, M_h2s_c, M_hco3_c, M_hcys__L_c, M_ppbng_c, M_succ_c, M_uppg3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_suchms_c	M_cpppg3_c	M_nh4_c	M_2obut_c, M_co2_c, M_h2co3_c, M_h2o_c, M_h2s_c, M_h_c, M_hco3_c	M_2obut_c, M_h2co3_c, M_h2s_c, M_hco3_c, M_hcys__L_c, M_ppbng_c, M_succ_c, M_uppg3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_suchms_c	M_h2co3_c	M_nh4_c	M_2obut_c, M_cpppg3_c, M_h2o_c, M_h2s_c, M_h_c	M_2obut_c, M_cpppg3_c, M_h2s_c, M_hco3_c, M_hcys__L_c, M_ppbng_c
M_gsn_e	M_h2o2_c, M_h2o_c, M_o2_c	M_mqn6_c	M_rib__D_c	M_ficytcc553_c, M_focytcc553_c, M_gsn_c, M_gua_c, M_h_e, M_mql6_c	M_focytcc553_c, M_gua_c, M_h2o_c, M_h_c, M_h_e, M_mql6_c
M_h_e	M_o2s_c	M_gua_c	M_no3_c	M_glx_c, M_glyclt_c, M_gsn_e, M_h2o2_c, M_h2o_c, M_h_c, M_no_c, M_no_e, M_o2_c	M_glx_c, M_gsn_c, M_gsn_e, M_h_c, M_no3_e
M_h_e	M_o2s_c	M_no3_c	M_rib__D_c	M_glx_c, M_glyclt_c, M_gsn_c, M_gsn_e, M_gua_c, M_h_c, M_no3_e	M_glx_c, M_glyclt_c, M_gsn_e, M_gua_c, M_h2o2_c, M_h2o_c, M_h_c, M_no_c, M_no_e, M_o2_c
M_h_e	M_prpp_c	M_orot_c	M_ump_c	M_ade_c, M_amp_c, M_co2_c, M_h_c, M_lac__D_c, M_lac__L_c, M_lac__L_e, M_orot_e, M_ppi_c, M_ura_c	M_ade_c, M_amp_c, M_co2_c, M_lac__D_c, M_lac__L_c, M_lac__L_e, M_orot5p_c
M_h_e	M_orot5p_c	M_h2co3_c	M_udp_c	M_adp_c, M_atp_c, M_co2_c, M_h_c, M_pi_c	M_adp_c, M_h2o_c, M_h_c, M_pi_c, M_pser__D_c, M_ser__D_c, M_ser__D_e, M_ump_c
M_h_e	M_orot5p_c	M_h2co3_c	M_utp_c	M_adp_c, M_atp_c, M_co2_c, M_h_c, M_pi_c	M_adp_c, M_h2o_c, M_h_c, M_pi_c, M_pser__D_c, M_ser__D_c, M_ser__D_e, M_udp_c

M_h_e	M_orot5p_c	M_hco3_c	M_udp_c	M_adp_c, M_atp_c, M_co2_c, M_h2co3_c, M_h_c, M_pi_c	M_adp_c, M_h2co3_c, M_h2o_c, M_h_c, M_pi_c, M_pser__D_c, M_ser__D_c, M_ser__D_e, M_ump_c
M_h_e	M_orot5p_c	M_hco3_c	M_utp_c	M_adp_c, M_atp_c, M_co2_c, M_h2co3_c, M_h_c, M_pi_c	M_adp_c, M_h2co3_c, M_h2o_c, M_h_c, M_pi_c, M_pser__D_c, M_ser__D_c, M_ser__D_e, M_udp_c
M_gsn_e	M_udp_c	M_gua_c	M_nadp_c	M_dudp_c, M_h2o_c, M_h_c, M_h_e, M_nadph_c, M_rib__D_c, M_trdrd_c	M_gsn_c, M_h_e, M_nadph_c, M_rib__D_c, M_trdox_c, M_trdrd_c
M_gsn_e	M_udp_c	M_nadp_c	M_rib__D_c	M_dudp_c, M_gsn_c, M_gua_c, M_h_e, M_nadph_c, M_trdox_c, M_trdrd_c	M_dudp_c, M_gua_c, M_h2o_c, M_h_c, M_h_e, M_nadph_c, M_trdrd_c
M_h_e	M_udp_c	M_gua_c	M_nadp_c	M_dudp_c, M_gsn_e, M_h2o_c, M_h_c, M_nadph_c, M_rib__D_c, M_trdrd_c	M_gsn_c, M_gsn_e, M_nadph_c, M_rib__D_c, M_trdox_c, M_trdrd_c
M_h_e	M_udp_c	M_nadp_c	M_rib__D_c	M_dudp_c, M_gsn_c, M_gsn_e, M_gua_c, M_nadph_c, M_trdox_c, M_trdrd_c	M_dudp_c, M_gsn_e, M_gua_c, M_h2o_c, M_h_c, M_nadph_c, M_trdrd_c
M_atp_c	M_trdrd_c	M_dadp_c	M_h_c	M_10fthf_c, M_damp_c, M_datp_c, M_for_c, M_no2_c, M_no2_e, M_no3_c	M_adp_c, M_datp_c, M_for_c, M_h2o_c, M_no2_c, M_no2_e, M_no3_c, M_pi_c, M_thf_c
M_25aics_c, M_aicar_c, M_fum_c	M_h2o_c	M_fprica_c	M_oaa_c	M_10fthf_c, M_for_c, M_fum_c, M_h_c, M_mql6_c, M_mqn6_c, M_succ_c	M_aicar_c, M_for_c, M_h_c, M_imp_c, M_mal__L_c, M_mql6_c
M_25aics_c, M_aicar_c, M_fum_c	M_h2o_c	M_fprica_c	M_succ_c	M_10fthf_c, M_for_c, M_fum_c, M_h_c, M_mqn6_c	M_aicar_c, M_for_c, M_h_c, M_imp_c, M_mal__L_c, M_mql6_c
M_h2o_c	M_h_e	M_ala__D_c, M_ala__L_c	M_pi_c	M_2kmb_c, M_acmam_c, M_acmama_c, M_ala__D_c, M_dkmpp_c, M_for_c, M_h_c, M_na1_c, M_na1_e, M_pi_e	M_2kmb_c, M_acmam_c, M_ala__D_c, M_ala__L_e, M_dkmpp_c, M_for_c, M_h_c, M_na1_c, M_o2_c
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_gsn_e	M_acald_c	M_gua_c	M_co2_c, M_dxyl5p_c, M_g3p_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e, M_hco3_c	M_dxyl5p_c, M_g3p_c, M_gsn_c, M_h2co3_c, M_h_e, M_hco3_c, M_pyr_c
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_gsn_e	M_acald_c	M_rib__D_c	M_co2_c, M_dxyl5p_c, M_g3p_c, M_gua_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e, M_hco3_c	M_dxyl5p_c, M_g3p_c, M_gsn_c, M_gua_c, M_h2co3_c, M_h_e, M_hco3_c, M_pyr_c

M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_gsn_e	M_co2_c	M_gua_c	M_acald_c, M_dxyl5p_c, M_g3p_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e	M_acald_c, M_dxyl5p_c, M_gsn_c, M_h2co3_c, M_h_e, M_hco3_c, M_pyr_c
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_gsn_e	M_co2_c	M_rib__D_c	M_acald_c, M_dxyl5p_c, M_g3p_c, M_gua_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e	M_acald_c, M_dxyl5p_c, M_gsn_c, M_gua_c, M_h2co3_c, M_h_e, M_hco3_c, M_pyr_c
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_gsn_e	M_dxyl5p_c	M_gua_c	M_acald_c, M_co2_c, M_g3p_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e, M_hco3_c	M_acald_c, M_g3p_c, M_gsn_c, M_h2co3_c, M_h_e, M_hco3_c, M_pyr_c
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_gsn_e	M_dxyl5p_c	M_rib__D_c	M_acald_c, M_co2_c, M_g3p_c, M_gua_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e, M_hco3_c	M_acald_c, M_g3p_c, M_gsn_c, M_gua_c, M_h2co3_c, M_h_e, M_hco3_c, M_pyr_c
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_gsn_e	M_gua_c	M_h2co3_c	M_2ddg6p_c, M_acald_c, M_dxyl5p_c, M_g3p_c, M_gsn_c, M_h_e, M_hco3_c, M_pyr_c	M_acald_c, M_dxyl5p_c, M_g3p_c, M_h2o_c, M_h_c, M_h_e
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_gsn_e	M_h2co3_c	M_rib__D_c	M_acald_c, M_dxyl5p_c, M_g3p_c, M_gua_c, M_h2o_c, M_h_c, M_h_e	M_acald_c, M_dxyl5p_c, M_gsn_c, M_gua_c, M_h_e, M_hco3_c
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_h_e	M_acald_c	M_gua_c	M_co2_c, M_dxyl5p_c, M_g3p_c, M_gsn_e, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c	M_dxyl5p_c, M_g3p_c, M_gsn_c, M_gsn_e, M_h2co3_c, M_hco3_c, M_pyr_c

M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_h_e	M_acald_c	M_rib__D_c	M_co2_c, M_dxyl5p_c, M_g3p_c, M_gsn_e, M_gua_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c	M_dxyl5p_c, M_g3p_c, M_gsn_c, M_gsn_e, M_gua_c, M_h2co3_c, M_hco3_c, M_pyr_c
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_h_e	M_co2_c	M_gua_c	M_acald_c, M_dxyl5p_c, M_g3p_c, M_gsn_e, M_h2co3_c, M_h2o_c, M_h_c	M_acald_c, M_dxyl5p_c, M_gsn_c, M_gsn_e, M_h2co3_c, M_hco3_c, M_pyr_c
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_h_e	M_co2_c	M_rib__D_c	M_acald_c, M_dxyl5p_c, M_g3p_c, M_gsn_e, M_gua_c, M_h2co3_c, M_h2o_c, M_h_c	M_acald_c, M_dxyl5p_c, M_gsn_c, M_gsn_e, M_gua_c, M_h2co3_c, M_hco3_c, M_pyr_c
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_h_e	M_dxyl5p_c	M_gua_c	M_acald_c, M_co2_c, M_g3p_c, M_gsn_e, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c	M_acald_c, M_g3p_c, M_gsn_c, M_gsn_e, M_h2co3_c, M_hco3_c, M_pyr_c
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_h_e	M_dxyl5p_c	M_rib__D_c	M_acald_c, M_co2_c, M_g3p_c, M_gsn_e, M_gua_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c	M_acald_c, M_g3p_c, M_gsn_c, M_gsn_e, M_gua_c, M_h2co3_c, M_hco3_c, M_pyr_c
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_h_e	M_gua_c	M_h2co3_c	M_2ddg6p_c, M_acald_c, M_dxyl5p_c, M_g3p_c, M_gsn_c, M_gsn_e, M_hco3_c, M_pyr_c	M_acald_c, M_dxyl5p_c, M_g3p_c, M_gsn_e, M_h2o_c, M_h_c
M_2ddg6p_c, M_6pgc_c, M_g3p_c, M_h2o_c, M_pyr_c	M_h_e	M_h2co3_c	M_rib__D_c	M_acald_c, M_dxyl5p_c, M_g3p_c, M_gsn_e, M_gua_c, M_h2o_c, M_h_c	M_acald_c, M_dxyl5p_c, M_gsn_c, M_gsn_e, M_gua_c, M_hco3_c
M_adn_e	M_h2o2_c, M_h2o_c, M_o2_c	M_mqn6_c	M_rib__D_c	M_ade_c, M_adn_c, M_ficytcc553_c, M_focytcc553_c, M_h_e, M_hxan_c, M_mql6_c	M_ade_c, M_focytcc553_c, M_h2o_c, M_h_c, M_h_e, M_hxan_c, M_mql6_c, M_nh4_c

M_h2o_c	M_phe__L_e	M_glu__L_c	M_h2co3_c	M_4abut_c, M_gln__L_c, M_h_e, M_hco3_c	M_akg_c, M_co2_c, M_h_c, M_h_e
M_h_e	M_mql6_c	M_1pyr5c_c	M_succ_e	M_fad_c, M_fadh2_c, M_fum_c, M_fum_e, M_h_c, M_na1_c, M_pro__L_e	M_fadh2_c, M_fum_c, M_h_c, M_na1_c, M_na1_e, M_pro__L_c, M_pro__L_e, M_succ_c
M_h_e	M_mqn6_c	M_1pyr5c_c	M_succ_c	M_fad_c, M_fadh2_c, M_fum_c, M_fum_e, M_h_c, M_na1_c, M_pro__L_e	M_fadh2_c, M_fum_e, M_h_c, M_na1_c, M_na1_e, M_pro__L_c, M_pro__L_e, M_succ_e
M_h_e	M_mqn6_c	M_1pyr5c_c	M_succ_e	M_fad_c, M_fadh2_c, M_fum_c, M_fum_e, M_h_c, M_na1_c, M_pro__L_e	M_fadh2_c, M_fum_c, M_h_c, M_na1_c, M_na1_e, M_pro__L_c, M_pro__L_e, M_succ_c
M_cdp_c	M_gsn_e	M_gua_c	M_nadp_c	M_dcdp_c, M_gsn_c, M_h_e, M_nadph_c, M_rib__D_c, M_trdox_c, M_trdrd_c	M_dcdp_c, M_h2o_c, M_h_c, M_h_e, M_nadph_c, M_rib__D_c, M_trdrd_c
M_cdp_c	M_gsn_e	M_nadp_c	M_rib__D_c	M_dcdp_c, M_gua_c, M_h2o_c, M_h_c, M_h_e, M_nadph_c, M_trdrd_c	M_gsn_c, M_gua_c, M_h_e, M_nadph_c, M_trdox_c, M_trdrd_c
M_cdp_c	M_h_e	M_gua_c	M_nadp_c	M_dcdp_c, M_gsn_c, M_gsn_e, M_nadph_c, M_rib__D_c, M_trdox_c, M_trdrd_c	M_dcdp_c, M_gsn_e, M_h2o_c, M_h_c, M_nadph_c, M_rib__D_c, M_trdrd_c
M_cdp_c	M_h_e	M_nadp_c	M_rib__D_c	M_dcdp_c, M_gsn_e, M_gua_c, M_h2o_c, M_h_c, M_nadph_c, M_trdrd_c	M_gsn_c, M_gsn_e, M_gua_c, M_nadph_c, M_trdox_c, M_trdrd_c
M_h_e	M_mql6_c	M_pyr_c	M_succ_e	M_acald_c, M_co2_c, M_fum_c, M_fum_e, M_h_c, M_mqn6_c, M_pyr_e	M_acald_c, M_co2_c, M_fum_c, M_h_c, M_lac__D_c, M_succ_c
M_3dhq_c, M_3dhsk_c, M_h2o_c	M_mlthf_c	M_skm_c	M_thf_c	M_2dhp_c, M_3mob_c, M_for_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c, M_pant__R_c	M_3dhsk_c, M_3mob_c, M_for_c, M_h_c, M_methf_c, M_nadp_c
M_fmnh2_c	M_gdpddman_c, M_gdpmann_c, M_h2o_c	M_gdpfuc_c	M_pi_c	M_1pyr5c_c, M_fmn_c, M_gdpddman_c, M_h_c, M_na1_c, M_na1_e, M_nadp_c	M_1pyr5c_c, M_h2o_c, M_h_c, M_na1_c, M_na1_e, M_nadp_c, M_nadph_c, M_pro__L_c
M_fmnh2_c	M_gdpddman_c, M_gdpmann_c, M_h2o_c	M_gdpfuc_c	M_ribflv_c	M_1pyr5c_c, M_fmn_c, M_gdpddman_c, M_h_c, M_na1_c, M_na1_e, M_nadp_c	M_1pyr5c_c, M_h2o_c, M_h_c, M_na1_c, M_na1_e, M_nadp_c, M_nadph_c, M_pi_c, M_pro__L_c
M_coa_c, M_dhna_c, M_sbzcoa_c	M_glu__L_c	M_adp_c	M_co2_c	M_2dmmq6_c, M_4abut_c, M_atp_c, M_dhna_c, M_glutrna_c, M_h_c, M_ppi_c, M_sucbz_c	M_2dmmq6_c, M_4abut_c, M_atp_c, M_glutrna_c, M_octdp_c, M_ppi_c, M_trnaglu_c
M_coa_c, M_dhna_c, M_sbzcoa_c	M_glu__L_c	M_amp_c	M_co2_c	M_2dmmq6_c, M_4abut_c, M_adp_c, M_atp_c, M_dhna_c, M_glutrna_c, M_h_c, M_ppi_c, M_sucbz_c	M_2dmmq6_c, M_4abut_c, M_adp_c, M_atp_c, M_glutrna_c, M_octdp_c, M_ppi_c, M_trnaglu_c
M_h_e	M_orot5p_c	M_h2co3_c	M_orot_c	M_co2_c, M_hco3_c, M_pi_c, M_ppi_c, M_prpp_c, M_pser__D_c, M_ser__D_c, M_ser__D_e	M_h2o_c, M_h_c, M_orot_e

M_arg__L_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_cpppg3_c	M_orn_c	M_agm_c, M_arg__L_c, M_h2co3_c, M_h_e, M_hco3_c, M_nh4_c, M_ptrc_c, M_uppg3_c	M_agm_c, M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e, M_hco3_c, M_nh4_c, M_ptrc_c, M_urea_c
M_arg__L_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_cpppg3_c	M_ptrc_c	M_agm_c, M_arg__L_c, M_h2co3_c, M_h_e, M_hco3_c, M_nh4_c, M_orn_c, M_uppg3_c	M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e, M_hco3_c
M_arg__L_e	M_h2o_c, M_hmbil_c, M_uppg3_c	M_cpppg3_c	M_urea_c	M_agm_c, M_arg__L_c, M_h2co3_c, M_h_e, M_hco3_c, M_nh4_c, M_orn_c, M_ptrc_c, M_uppg3_c	M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e, M_hco3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_h_e	M_cpppg3_c	M_orn_c	M_agm_c, M_arg__L_e, M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_nh4_c, M_ptrc_c, M_urea_c	M_arg__L_c, M_arg__L_e, M_h2co3_c, M_hco3_c, M_nh4_c, M_ptrc_c, M_uppg3_c
M_h2o_c	M_h_e	M_4hpro_LT_c	M_ser__D_c	M_1p3h5c_c, M_4hglusa_c, M_e4hglu_c, M_h_c, M_nad_c, M_no3_c, M_no3_e, M_pi_c, M_ser__D_e	M_1p3h5c_c, M_4hglusa_c, M_e4hglu_c, M_nadh_c, M_no3_c, M_no3_e, M_pi_c, M_pser__D_c
M_orot5p_c	M_xan_e	M_co2_c	M_xmp_c	M_4abut_c, M_h_c, M_h_e, M_orot_c, M_ppi_c, M_prpp_c	M_glu__L_c, M_h_e, M_orot_c, M_ppi_c, M_ump_c, M_xan_c
M_h_e	M_nadp_c	M_acald_c	M_glu__L_c	M_4abut_c, M_co2_c, M_icit_c, M_nadph_c, M_phe__L_c, M_phe__L_e, M_phpyr_c, M_pyr_c	M_akg_c, M_co2_c, M_etoh_c, M_h_c, M_icit_c, M_nadph_c, M_phe__L_e
M_h_e	M_nadp_c	M_acald_c	M_phpyr_c	M_4abut_c, M_co2_c, M_glu__L_c, M_icit_c, M_nadph_c, M_phe__L_c, M_phe__L_e, M_pyr_c	M_akg_c, M_co2_c, M_etoh_c, M_glu__L_c, M_icit_c, M_nadph_c, M_phe__L_e
M_nadp_c	M_phe__L_e	M_acald_c	M_glu__L_c	M_4abut_c, M_akg_c, M_co2_c, M_etoh_c, M_h_c, M_h_e	M_4abut_c, M_co2_c, M_h_e, M_icit_c, M_nadph_c, M_phe__L_c, M_phpyr_c, M_pyr_c
M_nadp_c	M_phe__L_e	M_acald_c	M_phpyr_c	M_4abut_c, M_akg_c, M_co2_c, M_etoh_c, M_glu__L_c, M_h_c, M_h_e	M_4abut_c, M_co2_c, M_glu__L_c, M_h_e, M_icit_c, M_nadph_c, M_phe__L_c, M_pyr_c
M_h2o_c	M_h_e	M_pi_c	M_xmp_c	M_fprica_c, M_h_c, M_imp_c, M_nadh_c, M_ppi_c, M_prpp_c, M_xan_e	M_fprica_c, M_imp_c, M_nad_c, M_nadh_c, M_pi_e
M_h_e	M_o2s_c	M_cys__L_c	M_no3_c	M_adp_c, M_atp_c, M_cys__L_e, M_ficytcc553_c, M_focytcc553_c, M_no_c, M_pi_c	M_adp_c, M_atp_c, M_cys__L_e, M_ficytcc553_c, M_h_c, M_no3_e
M_2ddg6p_c, M_g3p_c, M_pyr_c	M_ara5p_c, M_db4p_c, M_for_c, M_h_c, M_ru5p__D_c, M_xu5p__D_c	M_acald_c	M_f6p_c	M_ara5p_c, M_co2_c, M_db4p_c, M_dxyl5p_c, M_e4p_c, M_for_c, M_g3p_c, M_gmhep7p_c, M_h_c	M_ara5p_c, M_co2_c, M_db4p_c, M_dxyl5p_c, M_for_c, M_gmhep7p_c, M_pyr_c, M_s7p_c

M_2ddg6p_c, M_g3p_c, M_pyr_c	M_ara5p_c, M_db4p_c, M_for_c, M_h_c, M_ru5p__D_c, M_xu5p__D_c	M_co2_c	M_f6p_c	M_acald_c, M_ara5p_c, M_db4p_c, M_dxyl5p_c, M_e4p_c, M_for_c, M_g3p_c, M_gmhep7p_c, M_h_c	M_acald_c, M_ara5p_c, M_db4p_c, M_dxyl5p_c, M_for_c, M_gmhep7p_c, M_pyr_c, M_s7p_c
M_h2o_c	M_h_e	M_mal__L_c	M_succ_c	M_26dap_LL_c, M_26dap__M_c, M_co2_c, M_fum_c, M_fum_e, M_h2co3_c, M_h_c, M_hco3_c, M_lys__L_c, M_succ_e	M_26dap_LL_c, M_26dap__M_c, M_co2_c, M_h2co3_c, M_h_c, M_hco3_c, M_lys__L_c, M_mal__L_e, M_sl26da_c
M_atp_c	M_mqn6_c	M_fad_c	M_nadp_c	M_adp_c, M_fmn_c, M_h_c, M_h_e, M_mql6_c, M_nadph_c	M_fadh2_c, M_h_c, M_h_e, M_mql6_c, M_nad_c
M_atp_c	M_f6p_c, M_g1p_c, M_g6p_c	M_nadph_c	M_ppi_c	M_6pgl_c, M_adp_c, M_f6p_c, M_g6p_c, M_h_c, M_nad_c, M_nadh_c, M_udpg_c, M_udpgal_c, M_utp_c	M_6pgl_c, M_adp_c, M_f6p_c, M_h_c, M_nad_c, M_nadh_c, M_nadp_c, M_nmn_c
M_h_e	M_mqn6_c	M_1pyr5c_c	M_orot_c	M_dhor__S_c, M_fad_c, M_fadh2_c, M_h_c, M_mql6_c, M_na1_c, M_pro__L_e	M_fadh2_c, M_h_c, M_mql6_c, M_na1_c, M_na1_e, M_orot_e, M_pro__L_c
M_h_e	M_icit_c	M_glu__L_c	M_thdp_c	M_23dhdp_c, M_3php_c, M_4abut_c, M_akg_c, M_co2_c, M_h_c, M_nadp_c, M_phe__L_e	M_23dhdp_c, M_3php_c, M_4abut_c, M_co2_c, M_nadp_c, M_nadph_c, M_phe__L_c, M_phe__L_e
M_h_e	M_icit_c	M_phpyr_c	M_thdp_c	M_23dhdp_c, M_3php_c, M_4abut_c, M_akg_c, M_co2_c, M_glu__L_c, M_h_c, M_nadp_c, M_phe__L_e, M_pser__L_c	M_23dhdp_c, M_3php_c, M_4abut_c, M_co2_c, M_nadp_c, M_nadph_c, M_phe__L_c, M_phe__L_e
M_h_e	M_icit_c	M_pser__L_c	M_thdp_c	M_23dhdp_c, M_3php_c, M_4abut_c, M_akg_c, M_co2_c, M_h_c, M_nadp_c, M_phe__L_e	M_23dhdp_c, M_3php_c, M_4abut_c, M_co2_c, M_nadp_c, M_nadph_c, M_phe__L_c, M_phe__L_e
M_icit_c	M_phe__L_e	M_glu__L_c	M_thdp_c	M_23dhdp_c, M_3php_c, M_4abut_c, M_co2_c, M_h_e, M_nadp_c, M_nadph_c, M_phe__L_c	M_23dhdp_c, M_3php_c, M_akg_c, M_co2_c, M_h_c, M_h_e, M_nadp_c
M_icit_c	M_phe__L_e	M_phpyr_c	M_thdp_c	M_23dhdp_c, M_3php_c, M_4abut_c, M_co2_c, M_h_e, M_nadp_c, M_nadph_c, M_phe__L_c	M_23dhdp_c, M_3php_c, M_akg_c, M_co2_c, M_h_c, M_h_e, M_nadp_c
M_icit_c	M_phe__L_e	M_pser__L_c	M_thdp_c	M_23dhdp_c, M_3php_c, M_4abut_c, M_co2_c, M_h_e, M_nadp_c, M_nadph_c, M_phe__L_c	M_23dhdp_c, M_3php_c, M_akg_c, M_co2_c, M_h_c, M_h_e, M_nadp_c
M_2dda7p_c, M_3dhq_c, M_3dhsk_c, M_h2o_c, M_pi_c	M_paps_c	M_amp_c	M_skm_c	M_3dhsk_c, M_h2s_c, M_nadph_c, M_pap_c, M_pi_c, M_so3_c, M_trdox_c, M_trdrd_c	M_h2o_c, M_h2s_c, M_h_c, M_nadp_c, M_nadph_c, M_pi_c, M_so3_c, M_trdox_c, M_trdrd_c

M_2dda7p_c, M_3dhq_c, M_3dhsk_c, M_h2o_c, M_pi_c	M_trdrd_c	M_amp_c	M_skm_c	M_3dhsk_c, M_h2s_c, M_nadph_c, M_pap_c, M_paps_c	M_h2o_c, M_h2s_c, M_h_c, M_nadp_c, M_nadph_c, M_paps_c, M_pi_c, M_so3_c
M_3dhq_c, M_3dhsk_c, M_h2o_c	M_paps_c	M_pi_c	M_skm_c	M_3dhsk_c, M_amp_c, M_h2s_c, M_nadph_c, M_pap_c, M_so3_c, M_trdox_c, M_trdrd_c	M_amp_c, M_h2o_c, M_h2s_c, M_h_c, M_nadp_c, M_nadph_c, M_so3_c, M_trdox_c, M_trdrd_c
M_3dhq_c, M_3dhsk_c, M_h2o_c	M_trdrd_c	M_pi_c	M_skm_c	M_3dhsk_c, M_amp_c, M_h2s_c, M_nadph_c, M_pap_c, M_paps_c	M_amp_c, M_h2o_c, M_h2s_c, M_h_c, M_nadp_c, M_nadph_c, M_paps_c, M_so3_c
M_atp_c	M_nadph_c	M_fmn_c	M_h2o_c	M_adp_c, M_dadp_c, M_datp_c, M_fad_c, M_h_c, M_nadp_c, M_pi_c, M_ppi_c, M_ribflv_c, M_trdox_c	M_dadp_c, M_datp_c, M_fad_c, M_fmnh2_c, M_h_c, M_pi_c, M_ppi_c, M_trdox_c, M_trdrd_c
M_atp_c	M_nadph_c	M_fmn_c	M_pi_c	M_adp_c, M_dadp_c, M_datp_c, M_fad_c, M_h_c, M_nadp_c, M_ppi_c, M_ribflv_c, M_trdox_c	M_dadp_c, M_datp_c, M_fad_c, M_fmnh2_c, M_h_c, M_ppi_c, M_trdox_c, M_trdrd_c
M_atp_c	M_h2o_c	M_pa_Hp_c	M_utp_c	M_12dgr_HP_c, M_adp_c, M_cdp_c, M_cmp_c, M_ctp_c, M_h_c	M_adp_c, M_cdp_c, M_cdpdag_HP_c, M_cmp_c, M_h_c, M_nh4_c, M_pi_c, M_ppi_c, M_udp_c
M_h2o_c	M_h_e	M_2obut_c	M_pi_c	M_atp_c, M_h_c, M_ile__L_c, M_nh4_c, M_pi_e, M_succ_c, M_suchms_c	M_atp_c, M_h_c, M_ile__L_e, M_nh4_c, M_succ_c, M_thr__L_e
M_h2o_c	M_h_e	M_nh4_c	M_pi_c	M_2obut_c, M_atp_c, M_h_c, M_ile__L_c, M_pi_e, M_succ_c, M_suchms_c	M_2obut_c, M_atp_c, M_h_c, M_ile__L_e, M_succ_c, M_thr__L_e
M_h2o_c	M_tyr__L_e	M_glu__L_c	M_h2co3_c	M_34hpp_c, M_4abut_c, M_gln__L_c, M_h_e, M_hco3_c	M_34hpp_c, M_akg_c, M_co2_c, M_h_c, M_h_e
M_asp__L_c, M_fum_c, M_nh4_c	M_mal__L_c	M_acald_c	M_succ_c	M_ala_B_c, M_co2_c, M_fum_c, M_iasp_c, M_mqn6_c, M_nad_c, M_nadh_c, M_nh4_c, M_oaa_c, M_pyr_c	M_ala_B_c, M_co2_c, M_h_c, M_iasp_c, M_mql6_c, M_mqn6_c, M_nad_c
M_4r5au_c, M_dmlz_c, M_ribflv_c	M_dad_2_e	M_2dr1p_c, M_2dr5p_c	M_hxan_c	M_2dr5p_c, M_ade_c, M_dad_2_c, M_db4p_c, M_h2o_c, M_h_e	M_2dr5p_c, M_ade_c, M_db4p_c, M_h_c, M_h_e, M_nh4_c, M_pi_c
M_4r5au_c, M_dmlz_c, M_ribflv_c	M_dad_2_e	M_2dr1p_c, M_2dr5p_c	M_nh4_c	M_2dr5p_c, M_ade_c, M_dad_2_c, M_db4p_c, M_din_c, M_h2o_c, M_h_e	M_2dr5p_c, M_ade_c, M_db4p_c, M_h_c, M_h_e, M_hxan_c, M_pi_c
M_4r5au_c, M_dmlz_c, M_ribflv_c	M_h_e	M_2dr1p_c, M_2dr5p_c	M_hxan_c	M_2dr5p_c, M_ade_c, M_dad_2_c, M_dad_2_e, M_db4p_c, M_h2o_c	M_2dr5p_c, M_ade_c, M_dad_2_e, M_db4p_c, M_h_c, M_nh4_c, M_pi_c

M_4r5au_c, M_dmlz_c, M_ribflv_c	M_h_e	M_2dr1p_c, M_2dr5p_c	M_nh4_c	M_2dr5p_c, M_ade_c, M_dad_2_c, M_dad_2_e, M_db4p_c, M_din_c, M_h2o_c	M_2dr5p_c, M_ade_c, M_dad_2_e, M_db4p_c, M_h_c, M_hxan_c, M_pi_c
M_dad_2_e	M_db4p_c	M_2dr1p_c, M_2dr5p_c	M_hxan_c	M_2dr5p_c, M_4r5au_c, M_ade_c, M_dmlz_c, M_h_c, M_h_e, M_nh4_c, M_pi_c, M_ribflv_c	M_4r5au_c, M_ade_c, M_dad_2_c, M_dmlz_c, M_h2o_c, M_h_e, M_nh4_c, M_ribflv_c
M_dad_2_e	M_db4p_c	M_2dr1p_c, M_2dr5p_c	M_nh4_c	M_2dr5p_c, M_4r5au_c, M_ade_c, M_dmlz_c, M_h_c, M_h_e, M_hxan_c, M_pi_c, M_ribflv_c	M_4r5au_c, M_ade_c, M_dad_2_c, M_din_c, M_dmlz_c, M_h2o_c, M_h_e, M_hxan_c, M_ribflv_c
M_db4p_c	M_h_e	M_2dr1p_c, M_2dr5p_c	M_hxan_c	M_2dr5p_c, M_4r5au_c, M_ade_c, M_dad_2_c, M_dad_2_e, M_dmlz_c, M_h2o_c, M_nh4_c, M_ribflv_c	M_2dr5p_c, M_4r5au_c, M_ade_c, M_dad_2_e, M_dmlz_c, M_h_c, M_nh4_c, M_pi_c, M_ribflv_c
M_db4p_c	M_h_e	M_2dr1p_c, M_2dr5p_c	M_nh4_c	M_2dr5p_c, M_4r5au_c, M_ade_c, M_dad_2_c, M_dad_2_e, M_din_c, M_dmlz_c, M_h2o_c, M_hxan_c, M_ribflv_c	M_2dr5p_c, M_4r5au_c, M_ade_c, M_dad_2_e, M_dmlz_c, M_h_c, M_hxan_c, M_pi_c, M_ribflv_c
M_2dda7p_c, M_3dhq_c, M_3dhsk_c, M_h2o_c, M_pi_c	M_mlthf_c	M_10fthf_c	M_skm_c	M_3dhsk_c, M_for_c, M_frmd_c, M_h_c, M_methf_c, M_nadp_c	M_for_c, M_frmd_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c, M_nh4_c
M_2dda7p_c, M_3dhq_c, M_3dhsk_c, M_h2o_c, M_pi_c	M_mlthf_c	M_for_c	M_skm_c	M_10fthf_c, M_3dhsk_c, M_frmd_c, M_h_c, M_methf_c, M_nadp_c	M_h2o_c, M_h_c, M_nadp_c, M_nadph_c
M_h_e	M_o2s_c	M_5apru_c	M_no3_c	M_25dhpp_c, M_h2o2_c, M_h2o_c, M_nh4_c, M_no_c, M_o2_c, M_o2_e, M_uri_c, M_uri_e	M_25dhpp_c, M_h_c, M_nh4_c, M_no3_e
M_3dhq_c, M_3dhsk_c, M_h2o_c	M_mlthf_c	M_fprica_c	M_skm_c	M_3dhsk_c, M_aicar_c, M_for_c, M_h_c, M_methf_c, M_nadp_c	M_aicar_c, M_for_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c
M_h2o_c	M_h_e	M_pi_c	M_succ_c	M_2obut_c, M_h_c, M_nh4_c, M_phom_c, M_succ_e	M_2obut_c, M_h_c, M_nh4_c, M_pi_e, M_suchms_c
M_gdpddman_c, M_gdpmann_c, M_h2o_c	M_h_e	M_gdpfuc_c	M_ser__D_c	M_amp_c, M_h2o_c, M_h_c, M_mal__L_c, M_mal__L_e, M_nadp_c, M_nadph_c, M_pap_c, M_pi_c, M_ser__D_e	M_gdpddman_c, M_mal__L_c, M_mal__L_e, M_nadp_c, M_nadph_c, M_pap_c, M_pi_c, M_pser__D_c

M_gdpddman_c, M_gdpmann_c, M_h2o_c	M_h_e	M_nadp_c	M_ser__D_c	M_amp_c, M_gdpfuc_c, M_h2o_c, M_h_c, M_mal__L_c, M_mal__L_e, M_nadph_c, M_pap_c, M_pi_c, M_ser__D_e	M_gdpddman_c, M_gdpfuc_c, M_mal__L_c, M_mal__L_e, M_nadph_c, M_pap_c, M_pi_c, M_pser__D_c
M_h_e	M_pi_c	M_hxan_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_ade_c, M_dgsn_c, M_duri_c, M_duri_e, M_gua_c, M_h2o_c	M_2dr1p_c, M_2dr5p_c, M_ade_c, M_din_c, M_duri_e, M_gua_c, M_h_c, M_nh4_c, M_ura_e
M_4ppcys_c	M_h_e	M_coa_c	M_h2co3_c	M_adp_c, M_amp_c, M_atp_c, M_co2_c, M_h_c, M_pap_c, M_pi_c	M_adp_c, M_amp_c, M_dpcoa_c, M_h2o_c, M_h_c, M_pan4p_c, M_pap_c, M_pi_c
M_4ppcys_c	M_h_e	M_coa_c	M_hco3_c	M_adp_c, M_amp_c, M_atp_c, M_co2_c, M_h2co3_c, M_h_c, M_pap_c, M_pi_c	M_adp_c, M_amp_c, M_dpcoa_c, M_h2co3_c, M_h2o_c, M_h_c, M_pan4p_c, M_pap_c, M_pi_c
M_4ppcys_c	M_h_e	M_dpcoa_c	M_h2co3_c	M_adp_c, M_amp_c, M_atp_c, M_co2_c, M_h_c, M_pap_c, M_pi_c	M_adp_c, M_amp_c, M_coa_c, M_h2o_c, M_h_c, M_pan4p_c, M_pap_c, M_pi_c
M_4ppcys_c	M_h_e	M_dpcoa_c	M_hco3_c	M_adp_c, M_amp_c, M_atp_c, M_co2_c, M_h2co3_c, M_h_c, M_pap_c, M_pi_c	M_adp_c, M_amp_c, M_coa_c, M_h2co3_c, M_h2o_c, M_h_c, M_pan4p_c, M_pap_c, M_pi_c
M_4ppcys_c	M_h_e	M_h2co3_c	M_ppi_c	M_adp_c, M_amp_c, M_coa_c, M_dpcoa_c, M_h2o_c, M_h_c, M_pan4p_c, M_pap_c, M_pi_c	M_adp_c, M_atp_c, M_co2_c, M_h_c, M_pap_c, M_pi_c
M_4ppcys_c	M_h_e	M_hco3_c	M_ppi_c	M_adp_c, M_amp_c, M_coa_c, M_dpcoa_c, M_h2co3_c, M_h2o_c, M_h_c, M_pan4p_c, M_pap_c, M_pi_c	M_adp_c, M_atp_c, M_co2_c, M_h2co3_c, M_h_c, M_pap_c, M_pi_c
M_4ppcys_c	M_pi_c	M_coa_c	M_h2co3_c	M_adp_c, M_amp_c, M_atp_c, M_co2_c, M_h_c, M_h_e	M_adp_c, M_amp_c, M_dpcoa_c, M_h2o_c, M_h_c, M_h_e
M_4ppcys_c	M_pi_c	M_coa_c	M_hco3_c	M_adp_c, M_amp_c, M_atp_c, M_co2_c, M_h2co3_c, M_h_c, M_h_e	M_adp_c, M_amp_c, M_dpcoa_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e
M_4ppcys_c	M_pi_c	M_dpcoa_c	M_h2co3_c	M_adp_c, M_amp_c, M_atp_c, M_co2_c, M_h_c, M_h_e	M_adp_c, M_amp_c, M_h2o_c, M_h_c, M_h_e, M_pan4p_c
M_4ppcys_c	M_pi_c	M_dpcoa_c	M_hco3_c	M_adp_c, M_amp_c, M_atp_c, M_co2_c, M_h2co3_c, M_h_c, M_h_e	M_adp_c, M_amp_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e, M_pan4p_c
M_4ppcys_c	M_pi_c	M_h2co3_c	M_ppi_c	M_adp_c, M_amp_c, M_dpcoa_c, M_h2o_c, M_h_c, M_h_e	M_adp_c, M_atp_c, M_co2_c, M_h_c, M_h_e
M_4ppcys_c	M_pi_c	M_hco3_c	M_ppi_c	M_adp_c, M_amp_c, M_dpcoa_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e	M_adp_c, M_atp_c, M_co2_c, M_h2co3_c, M_h_c, M_h_e
M_h_e	M_o2s_c	M_mal__L_c	M_no3_c	M_ficytcc553_c, M_focytcc553_c, M_fum_c, M_fum_e, M_mal__L_e, M_no_c	M_ficytcc553_c, M_fum_c, M_fum_e, M_h_c, M_no3_e
M_h_e	M_prpp_c	M_co2_c	M_orot_c	M_4abut_c, M_ade_c, M_amp_c, M_glu__L_c, M_glu__L_e, M_nicrnt_c, M_orot5p_c	M_4abut_c, M_ade_c, M_amp_c, M_h_c, M_nicrnt_c, M_orot_e, M_ppi_c, M_quln_c
M_h2o_c	M_h_e	M_2dr1p_c, M_2dr5p_c	M_ser__D_c	M_2dr5p_c, M_ade_c, M_dad_2_c, M_dad_2_e, M_h_c, M_hxan_c, M_nh4_c, M_ser__D_e, M_udcpdp_c	M_2dr5p_c, M_ade_c, M_dad_2_e, M_h_c, M_hxan_c, M_nh4_c, M_pi_c, M_pser__D_c

M_h2o_c	M_h_e	M_ade_c	M_ser__D_c	M_2dr1p_c, M_2dr5p_c, M_dad_2_c, M_dad_2_e, M_h_c, M_hxan_c, M_nh4_c, M_ser__D_e, M_udcpdp_c	M_2dr1p_c, M_2dr5p_c, M_dad_2_e, M_h_c, M_hxan_c, M_nh4_c, M_pi_c, M_pser__D_c
M_atp_c	M_ctp_c	M_ppi_c	M_utp_c	M_adp_c, M_cmpkdo_c, M_dudp_c, M_dump_c, M_h2o_c, M_h_c	M_adp_c, M_cmpkdo_c, M_dudp_c, M_dump_c, M_h_c, M_kdo_c, M_pi_c, M_udp_c
M_3dhq_c, M_3dhsk_c, M_h2o_c	M_cit_c, M_icit_c	M_h2co3_c	M_skm_c	M_3dhsk_c, M_akg_c, M_co2_c, M_h_c, M_nadp_c	M_akg_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c
M_3dhq_c, M_3dhsk_c, M_h2o_c	M_cit_c, M_icit_c	M_hco3_c	M_skm_c	M_3dhsk_c, M_akg_c, M_co2_c, M_h2co3_c, M_h_c, M_nadp_c	M_akg_c, M_h2co3_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c
M_3dhq_c, M_3dhsk_c, M_h2o_c	M_atp_c	M_h_c	M_pi_c	M_10fthf_c, M_3dhsk_c, M_adp_c, M_e4p_c, M_for_c, M_paps_c, M_thf_c	M_3dhsk_c, M_adp_c, M_aps_c, M_e4p_c, M_for_c, M_paps_c, M_pep_c
M_h_e	M_o2s_c	M_ni2_c	M_no3_c	M_adp_c, M_atp_c, M_ni2_e, M_no_c, M_o2_c, M_pi_c	M_atp_c, M_h_c, M_ni2_e, M_no3_e
M_h_e	M_o2s_c	M_ile__L_c	M_no3_c	M_adp_c, M_atp_c, M_ile__L_e, M_no_c, M_no_e, M_o2_c, M_pi_c	M_atp_c, M_h_c, M_ile__L_e, M_no3_e
M_adp_c	M_gsn_e	M_gua_c	M_nadp_c	M_23dhdp_c, M_dadp_c, M_gsn_c, M_h_e, M_nadph_c, M_rib__D_c, M_thdp_c, M_trdox_c, M_trdrd_c	M_dadp_c, M_h2o_c, M_h_c, M_h_e, M_nadph_c, M_rib__D_c, M_thdp_c, M_trdrd_c
M_adp_c	M_gsn_e	M_nadp_c	M_rib__D_c	M_dadp_c, M_gua_c, M_h2o_c, M_h_c, M_h_e, M_nadph_c, M_thdp_c, M_trdrd_c	M_gsn_c, M_gua_c, M_h_e, M_nadph_c, M_thdp_c, M_trdox_c, M_trdrd_c
M_adp_c	M_h_e	M_gua_c	M_nadp_c	M_23dhdp_c, M_dadp_c, M_gsn_c, M_gsn_e, M_nadph_c, M_rib__D_c, M_thdp_c, M_trdox_c, M_trdrd_c	M_dadp_c, M_gsn_e, M_h2o_c, M_h_c, M_nadph_c, M_rib__D_c, M_thdp_c, M_trdrd_c
M_adp_c	M_h_e	M_nadp_c	M_rib__D_c	M_dadp_c, M_gsn_e, M_gua_c, M_h2o_c, M_h_c, M_nadph_c, M_thdp_c, M_trdrd_c	M_gsn_c, M_gsn_e, M_gua_c, M_nadph_c, M_thdp_c, M_trdox_c, M_trdrd_c
M_gsn_e	M_trdrd_c	M_nadp_c	M_rib__D_c	M_23dhdp_c, M_adp_c, M_dadp_c, M_gsn_c, M_gua_c, M_h_e, M_nadph_c	M_adp_c, M_dadp_c, M_gua_c, M_h2o_c, M_h_c, M_h_e, M_nadph_c
M_h_e	M_trdrd_c	M_nadp_c	M_rib__D_c	M_23dhdp_c, M_adp_c, M_dadp_c, M_gsn_c, M_gsn_e, M_gua_c, M_nadph_c	M_adp_c, M_dadp_c, M_gsn_e, M_gua_c, M_h2o_c, M_h_c, M_nadph_c
M_dhf_c	M_h_e	M_10fthf_c	M_acald_c	M_adp_c, M_atp_c, M_etoh_e, M_for_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c	M_adp_c, M_etoh_c, M_etoh_e, M_for_c, M_h2o_c, M_h_c, M_nadph_c, M_pi_c, M_thf_c
M_h_e	M_o2s_c	M_no3_c	M_so4_c	M_adp_c, M_atp_c, M_h_c, M_no3_e, M_o2_c, M_so4_e	M_adp_c, M_atp_c, M_no_c, M_no_e, M_o2_c, M_pi_c, M_so4_e
M_duri_e	M_pep_c	M_2dr1p_c, M_2dr5p_c	M_nadp_c	M_2dr5p_c, M_h_c, M_h_e, M_nadph_c, M_pi_c, M_uacgam_c	M_duri_c, M_h_e, M_nadph_c, M_uaccg_c, M_uacgam_c

M_duri_e	M_pep_c	M_2dr1p_c, M_2dr5p_c	M_uamr_c	M_2dr5p_c, M_h_c, M_h_e, M_nadp_c, M_nadph_c, M_pi_c, M_uacgam_c	M_duri_c, M_h_e, M_nadp_c, M_nadph_c, M_uaccg_c, M_uacgam_c
M_duri_e	M_pep_c	M_nadp_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_duri_c, M_h_e, M_nadph_c, M_uaccg_c, M_uacgam_c	M_2dr1p_c, M_2dr5p_c, M_h_c, M_h_e, M_nadph_c, M_pi_c, M_uacgam_c
M_duri_e	M_pep_c	M_uamr_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_duri_c, M_h_e, M_nadp_c, M_nadph_c, M_uaccg_c, M_uacgam_c	M_2dr1p_c, M_2dr5p_c, M_h_c, M_h_e, M_nadp_c, M_nadph_c, M_pi_c, M_uacgam_c
M_duri_e	M_uacgam_c	M_2dr1p_c, M_2dr5p_c	M_nadp_c	M_2dr5p_c, M_h_c, M_h_e, M_nadph_c, M_pep_c, M_pi_c	M_duri_c, M_h_e, M_nadph_c, M_pep_c, M_uaccg_c
M_duri_e	M_uacgam_c	M_2dr1p_c, M_2dr5p_c	M_uamr_c	M_2dr5p_c, M_h_c, M_h_e, M_nadp_c, M_nadph_c, M_pep_c, M_pi_c	M_duri_c, M_h_e, M_nadp_c, M_nadph_c, M_pep_c, M_uaccg_c
M_duri_e	M_uacgam_c	M_nadp_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_duri_c, M_h_e, M_nadph_c, M_pep_c, M_uaccg_c	M_2dr1p_c, M_2dr5p_c, M_h_c, M_h_e, M_nadph_c, M_pep_c, M_pi_c
M_duri_e	M_uacgam_c	M_uamr_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_duri_c, M_h_e, M_nadp_c, M_nadph_c, M_pep_c, M_uaccg_c	M_2dr1p_c, M_2dr5p_c, M_h_c, M_h_e, M_nadp_c, M_nadph_c, M_pep_c, M_pi_c
M_h_e	M_pep_c	M_2dr1p_c, M_2dr5p_c	M_nadp_c	M_2dr5p_c, M_duri_e, M_h_c, M_nadph_c, M_pi_c, M_uacgam_c	M_duri_c, M_duri_e, M_nadph_c, M_uaccg_c, M_uacgam_c
M_h_e	M_pep_c	M_2dr1p_c, M_2dr5p_c	M_uamr_c	M_2dr5p_c, M_duri_e, M_h_c, M_nadp_c, M_nadph_c, M_pi_c, M_uacgam_c	M_duri_c, M_duri_e, M_nadp_c, M_nadph_c, M_uaccg_c, M_uacgam_c
M_h_e	M_pep_c	M_nadp_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_duri_c, M_duri_e, M_nadph_c, M_uaccg_c, M_uacgam_c	M_2dr1p_c, M_2dr5p_c, M_duri_e, M_h_c, M_nadph_c, M_pi_c, M_uacgam_c
M_h_e	M_pep_c	M_uamr_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_duri_c, M_duri_e, M_nadp_c, M_nadph_c, M_uaccg_c, M_uacgam_c	M_2dr1p_c, M_2dr5p_c, M_duri_e, M_h_c, M_nadp_c, M_nadph_c, M_pi_c, M_uacgam_c
M_h_e	M_uacgam_c	M_2dr1p_c, M_2dr5p_c	M_nadp_c	M_2dr5p_c, M_duri_e, M_h_c, M_nadph_c, M_pep_c, M_pi_c	M_duri_c, M_duri_e, M_nadph_c, M_pep_c, M_uaccg_c
M_h_e	M_uacgam_c	M_2dr1p_c, M_2dr5p_c	M_uamr_c	M_2dr5p_c, M_duri_e, M_h_c, M_nadp_c, M_nadph_c, M_pep_c, M_pi_c	M_duri_c, M_duri_e, M_nadp_c, M_nadph_c, M_pep_c, M_uaccg_c
M_h_e	M_uacgam_c	M_nadp_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_duri_c, M_duri_e, M_nadph_c, M_pep_c, M_uaccg_c	M_2dr1p_c, M_2dr5p_c, M_duri_e, M_h_c, M_nadph_c, M_pep_c, M_pi_c
M_h_e	M_uacgam_c	M_uamr_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_duri_c, M_duri_e, M_nadp_c, M_nadph_c, M_pep_c, M_uaccg_c	M_2dr1p_c, M_2dr5p_c, M_duri_e, M_h_c, M_nadp_c, M_nadph_c, M_pep_c, M_pi_c
M_h_e	M_mql6_c	M_fad_c	M_succ_e	M_atp_c, M_ficytcc553_c, M_fmn_c, M_focytcc553_c, M_fum_c, M_fum_e	M_fadh2_c, M_ficytcc553_c, M_fmn_c, M_focytcc553_c, M_fum_c, M_ppi_c, M_succ_c
M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_akg_c	M_2dhp_c	M_4abut_c	M_1pyr5c_c, M_3mob_c, M_co2_c, M_h2co3_c, M_h_c, M_hco3_c, M_mlthf_c, M_thf_c, M_val__L_c	M_1pyr5c_c, M_glu__L_c, M_h2co3_c, M_h2o_c, M_hco3_c, M_mlthf_c, M_thf_c, M_val__L_c

M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_akg_c	M_2dhp_c	M_co2_c	M_1pyr5c_c, M_3mob_c, M_4abut_c, M_h2co3_c, M_h_c, M_hco3_c, M_mlthf_c, M_thf_c, M_val__L_c	M_1pyr5c_c, M_4abut_c, M_glu__L_c, M_h2co3_c, M_h2o_c, M_hco3_c, M_mlthf_c, M_thf_c, M_val__L_c
M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_akg_c	M_4abut_c	M_thf_c	M_1pyr5c_c, M_2dhp_c, M_glu__L_c, M_h2co3_c, M_h2o_c, M_hco3_c, M_mlthf_c, M_val__L_c	M_1pyr5c_c, M_3mob_c, M_co2_c, M_h2co3_c, M_h_c, M_hco3_c, M_mlthf_c, M_val__L_c
M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_akg_c	M_co2_c	M_thf_c	M_1pyr5c_c, M_2dhp_c, M_4abut_c, M_glu__L_c, M_h2co3_c, M_h2o_c, M_hco3_c, M_mlthf_c, M_val__L_c	M_1pyr5c_c, M_3mob_c, M_4abut_c, M_h2co3_c, M_h_c, M_hco3_c, M_mlthf_c, M_val__L_c
M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_val__L_c	M_2dhp_c	M_4abut_c	M_1pyr5c_c, M_3mob_c, M_akg_c, M_co2_c, M_h2co3_c, M_h_c, M_hco3_c, M_mlthf_c	M_1pyr5c_c, M_akg_c, M_glu__L_c, M_h2co3_c, M_h2o_c, M_hco3_c, M_mlthf_c
M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_val__L_c	M_2dhp_c	M_co2_c	M_1pyr5c_c, M_3mob_c, M_4abut_c, M_akg_c, M_h2co3_c, M_h_c, M_hco3_c, M_mlthf_c	M_1pyr5c_c, M_4abut_c, M_akg_c, M_glu__L_c, M_h2co3_c, M_h2o_c, M_hco3_c, M_mlthf_c
M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_val__L_c	M_4abut_c	M_thf_c	M_1pyr5c_c, M_2dhp_c, M_akg_c, M_glu__L_c, M_h2co3_c, M_h2o_c, M_hco3_c, M_mlthf_c	M_1pyr5c_c, M_3mob_c, M_akg_c, M_co2_c, M_h2co3_c, M_h_c, M_hco3_c, M_mlthf_c
M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_val__L_c	M_co2_c	M_thf_c	M_1pyr5c_c, M_2dhp_c, M_4abut_c, M_akg_c, M_glu__L_c, M_h2co3_c, M_h2o_c, M_hco3_c, M_mlthf_c	M_1pyr5c_c, M_3mob_c, M_4abut_c, M_akg_c, M_h2co3_c, M_h_c, M_hco3_c, M_mlthf_c
M_dxyl5p_c	M_f6p_c, M_g1p_c, M_g6p_c	M_6pgl_c	M_ppi_c	M_2me4p_c, M_4c2me_c, M_f6p_c, M_g6p_c, M_h_c, M_nadph_c, M_udpg_c, M_udpgal_c, M_utp_c	M_4c2me_c, M_ctp_c, M_f6p_c, M_h_c, M_nadp_c, M_nadph_c
M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_asp__L_c, M_fum_c, M_nh4_c	M_co2_c	M_mal__L_c	M_1pyr5c_c, M_2oph_c, M_3ophb_c, M_ala_B_c, M_h2co3_c, M_h2o_c	M_1pyr5c_c, M_2oph_c, M_ala_B_c, M_fum_c, M_h2co3_c, M_h_c
M_h_e	M_o2s_c	M_4hglusa_c	M_no3_c	M_1p3h5c_c, M_etoh_c, M_etoh_e, M_h2o2_c, M_h2o_c, M_no_c, M_no_e, M_o2_c	M_1p3h5c_c, M_etoh_c, M_etoh_e, M_h_c, M_no3_e

M_h_e	M_pi_c	M_ade_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_ade_e, M_duri_c	M_2dr1p_c, M_2dr5p_c, M_dad_2_c, M_glc__D_c, M_glc__D_e, M_h_c, M_ura_e
M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_mlthf_c	M_10fthf_c	M_pro__L_c	M_1pyr5c_c, M_for_c, M_fprica_c, M_gmp_c, M_h_c, M_imp_c, M_methf_c, M_nadp_c	M_for_c, M_fprica_c, M_gmp_c, M_h2o_c, M_h_c, M_imp_c, M_nadp_c, M_nadph_c, M_nh4_c
M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_mlthf_c	M_for_c	M_pro__L_c	M_10fthf_c, M_1pyr5c_c, M_fprica_c, M_gmp_c, M_h_c, M_imp_c, M_methf_c, M_nadp_c	M_fprica_c, M_gmp_c, M_h2o_c, M_h_c, M_imp_c, M_nadp_c, M_nadph_c, M_nh4_c
M_h2o_c	M_h_e	M_4abut_c	M_ade_c	M_ade_e, M_co2_c, M_gln__L_c	M_adn_c, M_co2_c, M_glu__L_e
M_h2o_c	M_h_e	M_ade_c	M_glu__L_c	M_4abut_c, M_adn_c, M_co2_c, M_glu__L_e	M_ade_e, M_co2_c, M_gln__L_c
M_h2o_c	M_h_e	M_h2co3_c	M_pi_c	M_acald_c, M_cbp_c, M_citr__L_c, M_co2_c, M_h_c, M_nh4_c, M_orn_e	M_acald_c, M_citr__L_c, M_hco3_c, M_nh4_c, M_orn_c, M_orn_e, M_pser__L_c
M_h2o_c	M_orn_e	M_h2co3_c	M_pi_c	M_acald_c, M_cbp_c, M_citr__L_c, M_co2_c, M_h_c, M_h_e	M_acald_c, M_citr__L_c, M_h_e, M_hco3_c, M_nh4_c, M_orn_c, M_pser__L_c
M_h_e	M_o2s_c	M_his__L_c	M_no3_c	M_adp_c, M_atp_c, M_his__L_e, M_no_c, M_o2_c, M_pi_c	M_atp_c, M_h_c, M_his__L_e, M_no3_e
M_h2o2_c, M_h2o_c, M_o2_c	M_nadph_c	M_4r5au_c	M_h_e	M_5aprbu_c, M_5apru_c, M_ficytcc553_c, M_h_c, M_mqn6_c	M_5apru_c, M_ficytcc553_c, M_focytcc553_c, M_h2o_c, M_h_c
M_h2o2_c, M_h2o_c, M_o2_c	M_nadph_c	M_h_e	M_pi_c	M_4r5au_c, M_5apru_c, M_ficytcc553_c, M_focytcc553_c, M_h2o_c, M_h_c	M_5aprbu_c, M_5apru_c, M_ficytcc553_c, M_h_c, M_mqn6_c
M_nadph_c	M_o2s_c	M_h_e	M_pi_c	M_4r5au_c, M_5aprbu_c, M_5apru_c, M_ficytcc553_c, M_h_c, M_mqn6_c	M_4r5au_c, M_5apru_c, M_ficytcc553_c, M_focytcc553_c, M_h2o_c, M_h_c
M_atp_c	M_h2o_c	M_fprica_c	M_h_c	M_adp_c, M_aicar_c, M_fad_c, M_fmn_c, M_for_c, M_pi_c, M_ppi_c, M_thf_c	M_adp_c, M_aicar_c, M_fad_c, M_fmn_c, M_imp_c, M_pi_c, M_ribflv_c
M_fmnh2_c	M_h2o_c, M_hmbil_c, M_uppg3_c	M_co2_c	M_pi_c	M_cpppg3_c, M_fmn_c, M_h2co3_c, M_hco3_c, M_nadp_c, M_nadph_c, M_nh4_c, M_ppbng_c, M_ribflv_c, M_uppg3_c	M_cpppg3_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_nadp_c
M_fmnh2_c	M_h2o_c, M_hmbil_c, M_uppg3_c	M_co2_c	M_ribflv_c	M_cpppg3_c, M_fmn_c, M_h2co3_c, M_hco3_c, M_nadp_c, M_nadph_c, M_nh4_c, M_pi_c, M_ppbng_c, M_uppg3_c	M_cpppg3_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_nadp_c
M_fmnh2_c	M_h2o_c, M_hmbil_c, M_uppg3_c	M_cpppg3_c	M_pi_c	M_fmn_c, M_h2co3_c, M_hco3_c, M_nadp_c, M_nadph_c, M_nh4_c, M_ppbng_c, M_ribflv_c, M_uppg3_c	M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_nadp_c

M_fmnh2_c	M_h2o_c, M_hmbil_c, M_uppg3_c	M_cpppg3_c	M_ribflv_c	M_fmn_c, M_h2co3_c, M_hco3_c, M_nadp_c, M_nadph_c, M_nh4_c, M_pi_c, M_ppbng_c, M_uppg3_c	M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_nadp_c
M_fmnh2_c	M_h2o_c, M_hmbil_c, M_uppg3_c	M_h2co3_c	M_pi_c	M_cpppg3_c, M_fmn_c, M_hco3_c, M_nadp_c	M_cpppg3_c, M_h2o_c, M_h_c, M_nadp_c
M_fmnh2_c	M_h2o_c, M_hmbil_c, M_uppg3_c	M_h2co3_c	M_ribflv_c	M_cpppg3_c, M_fmn_c, M_hco3_c, M_nadp_c	M_cpppg3_c, M_h2o_c, M_h_c, M_nadp_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_nadp_c	M_co2_c	M_pi_c	M_cpppg3_c, M_fmnh2_c, M_h2co3_c, M_h2o_c, M_h_c	M_fmn_c, M_fmnh2_c, M_h2co3_c, M_hco3_c, M_nadph_c, M_nh4_c, M_ppbng_c, M_ribflv_c, M_uppg3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_nadp_c	M_co2_c	M_ribflv_c	M_cpppg3_c, M_fmnh2_c, M_h2co3_c, M_h2o_c, M_h_c	M_fmn_c, M_fmnh2_c, M_h2co3_c, M_hco3_c, M_nadph_c, M_nh4_c, M_pi_c, M_ppbng_c, M_uppg3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_nadp_c	M_cpppg3_c	M_pi_c	M_co2_c, M_fmnh2_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c	M_fmn_c, M_fmnh2_c, M_h2co3_c, M_hco3_c, M_nadph_c, M_nh4_c, M_ppbng_c, M_ribflv_c, M_uppg3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_nadp_c	M_cpppg3_c	M_ribflv_c	M_co2_c, M_fmnh2_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c	M_fmn_c, M_fmnh2_c, M_h2co3_c, M_hco3_c, M_nadph_c, M_nh4_c, M_pi_c, M_ppbng_c, M_uppg3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_nadp_c	M_h2co3_c	M_pi_c	M_cpppg3_c, M_fmnh2_c, M_h2o_c, M_h_c	M_fmn_c, M_fmnh2_c, M_hco3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_nadp_c	M_h2co3_c	M_ribflv_c	M_cpppg3_c, M_fmnh2_c, M_h2o_c, M_h_c	M_fmn_c, M_fmnh2_c, M_hco3_c
M_3dhq_c, M_3dhsk_c, M_h2o_c	M_atp_c	M_pi_c	M_skm_c	M_3dhsk_c, M_adp_c, M_fad_c, M_fmn_c, M_fmnh2_c, M_nadph_c, M_ribflv_c	M_adp_c, M_fad_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c, M_ribflv_c
M_3dhq_c, M_3dhsk_c, M_h2o_c	M_fmnh2_c	M_pi_c	M_skm5p_c	M_3dhsk_c, M_adp_c, M_atp_c, M_fad_c, M_fmn_c, M_h_c, M_nadp_c, M_ppi_c	M_adp_c, M_atp_c, M_fad_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c
M_3dhq_c, M_3dhsk_c, M_h2o_c	M_fmnh2_c	M_ribflv_c	M_skm5p_c	M_3dhsk_c, M_adp_c, M_atp_c, M_fad_c, M_fmn_c, M_h_c, M_nadp_c, M_pi_c, M_ppi_c	M_adp_c, M_atp_c, M_fad_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c

M_h2o_c	M_h_e	M_ala__D_c, M_ala__L_c	M_nh4_c	M_2obut_c, M_acmam_c, M_acmama_c, M_ade_c, M_ade_e, M_ala__D_c, M_hxan_c, M_thr__L_e	M_2obut_c, M_acmam_c, M_ade_c, M_ade_e, M_ala__D_c, M_ala__L_e, M_h_c
M_h2o_c	M_h_e	M_ade_c	M_succ_c	M_2obut_c, M_5mta_c, M_5mtr_c, M_dcyt_c, M_dcyt_e, M_h_c, M_hxan_c, M_nh4_c, M_succ_e	M_2obut_c, M_5mtr_c, M_ade_e, M_dcyt_c, M_dcyt_e, M_h_c, M_hxan_c, M_nh4_c, M_suchms_c
M_gsn_e	M_o2_c	M_co2_c	M_gua_c	M_cpppg3_c, M_gsn_c, M_h2co3_c, M_h_e, M_hco3_c, M_ppp9_c, M_pppg9_c, M_rib__D_c, M_uppg3_c	M_cpppg3_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e
M_gsn_e	M_o2_c	M_co2_c	M_rib__D_c	M_cpppg3_c, M_gsn_c, M_gua_c, M_h2co3_c, M_h_e, M_hco3_c, M_ppp9_c, M_pppg9_c, M_uppg3_c	M_cpppg3_c, M_gua_c, M_h2co3_c, M_h2o_c, M_h_c, M_h_e
M_gsn_e	M_o2_c	M_gua_c	M_h2co3_c	M_cpppg3_c, M_h2o_c, M_h_c, M_h_e	M_gsn_c, M_h_e, M_hco3_c, M_ppp9_c, M_pppg9_c
M_gsn_e	M_o2_c	M_h2co3_c	M_rib__D_c	M_cpppg3_c, M_gsn_c, M_gua_c, M_h_e, M_hco3_c, M_ppp9_c, M_pppg9_c	M_cpppg3_c, M_gua_c, M_h2o_c, M_h_c, M_h_e
M_h_e	M_o2_c	M_co2_c	M_gua_c	M_cpppg3_c, M_gsn_c, M_gsn_e, M_h2co3_c, M_hco3_c, M_ppp9_c, M_pppg9_c, M_rib__D_c, M_uppg3_c	M_cpppg3_c, M_gsn_e, M_h2co3_c, M_h2o_c, M_h_c
M_h_e	M_o2_c	M_co2_c	M_rib__D_c	M_cpppg3_c, M_gsn_c, M_gsn_e, M_gua_c, M_h2co3_c, M_hco3_c, M_ppp9_c, M_pppg9_c, M_uppg3_c	M_cpppg3_c, M_gsn_e, M_gua_c, M_h2co3_c, M_h2o_c, M_h_c
M_h_e	M_o2_c	M_gua_c	M_h2co3_c	M_cpppg3_c, M_gsn_e, M_h2o_c, M_h_c	M_gsn_c, M_gsn_e, M_hco3_c, M_ppp9_c, M_pppg9_c
M_h_e	M_o2_c	M_h2co3_c	M_rib__D_c	M_cpppg3_c, M_gsn_c, M_gsn_e, M_gua_c, M_hco3_c, M_ppp9_c, M_pppg9_c	M_cpppg3_c, M_gsn_e, M_gua_c, M_h2o_c, M_h_c
M_h_e	M_o2s_c	M_no3_c	M_utp_c	M_adp_c, M_atp_c, M_ctp_c, M_h_c, M_nh4_c, M_no3_e	M_adp_c, M_atp_c, M_ctp_c, M_nh4_c, M_no_c, M_o2_c, M_pi_c
M_atp_c	M_h2o_c, M_hmbil_c, M_uppg3_c	M_2obut_c, M_nh4_c, M_thr__L_c	M_co2_c	M_2obut_c, M_adp_c, M_cpppg3_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_hom__L_c	M_2obut_c, M_adp_c, M_cpppg3_c, M_h2co3_c, M_hco3_c, M_hom__L_c, M_nh4_c, M_phom_c, M_pi_c, M_uppg3_c
M_atp_c	M_h2o_c, M_hmbil_c, M_uppg3_c	M_2obut_c, M_nh4_c, M_thr__L_c	M_cpppg3_c	M_2obut_c, M_adp_c, M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c, M_hom__L_c	M_2obut_c, M_adp_c, M_h2co3_c, M_hco3_c, M_hom__L_c, M_nh4_c, M_phom_c, M_pi_c, M_uppg3_c
M_atp_c	M_h2o_c, M_hmbil_c, M_uppg3_c	M_2obut_c, M_nh4_c, M_thr__L_c	M_h2co3_c	M_2obut_c, M_adp_c, M_cpppg3_c, M_h2o_c, M_h_c, M_hom__L_c	M_2obut_c, M_adp_c, M_cpppg3_c, M_hco3_c, M_hom__L_c, M_nh4_c, M_phom_c

M_h2o_c, M_hmbil_c, M_uppg3_c	M_hom__L_c	M_2obut_c, M_nh4_c, M_thr__L_c	M_co2_c	M_2obut_c, M_adp_c, M_atp_c, M_cpppg3_c, M_h2co3_c, M_hco3_c, M_nh4_c, M_phom_c, M_pi_c, M_uppg3_c	M_2obut_c, M_adp_c, M_atp_c, M_cpppg3_c, M_h2o_c, M_h_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_hom__L_c	M_2obut_c, M_nh4_c, M_thr__L_c	M_cpppg3_c	M_2obut_c, M_adp_c, M_atp_c, M_h2co3_c, M_hco3_c, M_nh4_c, M_phom_c, M_pi_c, M_uppg3_c	M_2obut_c, M_adp_c, M_atp_c, M_h2o_c, M_h_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_hom__L_c	M_2obut_c, M_nh4_c, M_thr__L_c	M_h2co3_c	M_2obut_c, M_adp_c, M_atp_c, M_cpppg3_c, M_hco3_c, M_nh4_c, M_phom_c	M_2obut_c, M_adp_c, M_atp_c, M_h2o_c, M_h_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_hom__L_c	M_co2_c	M_pi_c	M_2obut_c, M_adp_c, M_atp_c, M_cpppg3_c, M_h2co3_c, M_h2o_c, M_h_c	M_2obut_c, M_adp_c, M_atp_c, M_cpppg3_c, M_h2co3_c, M_hco3_c, M_nh4_c, M_phom_c, M_thr__L_c, M_uppg3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_hom__L_c	M_cpppg3_c	M_pi_c	M_2obut_c, M_adp_c, M_atp_c, M_co2_c, M_h2co3_c, M_h2o_c, M_h_c, M_hco3_c	M_2obut_c, M_adp_c, M_atp_c, M_h2co3_c, M_hco3_c, M_nh4_c, M_phom_c, M_thr__L_c, M_uppg3_c
M_h2o_c, M_hmbil_c, M_uppg3_c	M_hom__L_c	M_h2co3_c	M_pi_c	M_2obut_c, M_adp_c, M_atp_c, M_cpppg3_c, M_h2o_c, M_h_c	M_2obut_c, M_adp_c, M_atp_c, M_cpppg3_c, M_hco3_c, M_nh4_c, M_phom_c
M_1pyr5c_c, M_glu5sa_c, M_h2o_c, M_h_c	M_mlthf_c	M_10fthf_c	M_fadh2_c	M_1pyr5c_c, M_fad_c, M_for_c, M_h_c, M_methf_c, M_nadp_c	M_fad_c, M_for_c, M_h2o_c, M_h_c, M_nadp_c, M_nadph_c
M_h2o_c	M_h_e	M_ac_c	M_ump_c	M_2dr1p_c, M_2dr5p_c, M_duri_c, M_h_c, M_prpp_c, M_u3aga_HP_c, M_u3hga_HP_c, M_ura_e	M_2dr5p_c, M_ac_e, M_duri_c, M_h_c, M_ppi_c, M_prpp_c
M_h2o_c	M_h_e	M_ac_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_duri_c, M_h_c, M_prpp_c, M_u3aga_HP_c, M_u3hga_HP_c, M_ump_c, M_ura_e	M_2dr5p_c, M_ac_e, M_duri_c, M_h_c, M_ppi_c
M_h_e	M_o2s_c	M_no3_c	M_thm_c	M_adp_c, M_atp_c, M_h_c, M_no3_e, M_o2_c, M_orot_c, M_orot_e, M_thm_e	M_adp_c, M_atp_c, M_no_c, M_o2_c, M_orot_c, M_orot_e, M_pi_c, M_thm_e
M_h2o_c, M_h2o_e	M_h_e	M_h2co3_c	M_mal__L_c	M_ala_B_c, M_co2_c, M_fum_e, M_h_c, M_mal__L_e	M_ala_B_c, M_fum_c, M_fum_e, M_hco3_c
M_2dda7p_c, M_3dhq_c, M_3dhsk_c, M_h2o_c, M_pi_c	M_icit_c	M_h2co3_c	M_skm_c	M_3dhsk_c, M_4pasp_c, M_akg_c, M_co2_c, M_h_c, M_nadp_c	M_4pasp_c, M_akg_c, M_aspsa_c, M_h2o_c, M_h_c, M_nadp_c

M_2dda7p_c, M_3dhq_c, M_3dhsk_c, M_h2o_c, M_pi_c	M_icit_c	M_hco3_c	M_skm_c	M_3dhsk_c, M_4pasp_c, M_akg_c, M_co2_c, M_h2co3_c, M_h_c, M_nadp_c	M_4pasp_c, M_akg_c, M_aspsa_c, M_h2co3_c, M_h2o_c, M_h_c, M_nadp_c
M_h2o_c	M_h_e	M_ser__D_c	M_ura_c	M_2dr1p_c, M_2dr5p_c, M_clpn_HP_c, M_duri_e, M_glyc_c, M_h_c, M_pg_HP_c, M_pgp_HP_c, M_pi_c, M_pser__D_c	M_2dr1p_c, M_2dr5p_c, M_duri_c, M_duri_e, M_glyc_c, M_h_c, M_pgp_HP_c, M_ser__D_e
M_h2o_c	M_mqn6_c	M_mal__L_c	M_succ_c	M_2obut_c, M_fum_c, M_fum_e, M_h2_e, M_h_c	M_2obut_c, M_h2_e, M_h_c, M_mal__L_e, M_mql6_c, M_nh4_c, M_oaa_c, M_suchms_c
M_h_e	M_orot5p_c	M_adp_c	M_orot_c	M_ade_e, M_atp_c, M_co2_c, M_ppi_c, M_prpp_c	M_ade_e, M_atp_c, M_h_c, M_orot_e
M_h2o_c	M_h_e	M_2obut_c	M_ser__D_c	M_ade_c, M_ade_e, M_h_c, M_hxan_c, M_nh4_c, M_pi_c, M_ser__D_e, M_succ_c, M_suchms_c	M_ade_c, M_ade_e, M_h_c, M_hxan_c, M_nh4_c, M_pser__D_c, M_succ_c, M_thr__L_e
M_h2o_c	M_h_e	M_nh4_c	M_ser__D_c	M_2obut_c, M_ade_c, M_ade_e, M_h_c, M_hxan_c, M_pi_c, M_ser__D_e	M_2obut_c, M_ade_c, M_ade_e, M_hxan_c, M_pi_c, M_pser__D_c, M_succ_c, M_thr__L_e
M_h2o_c	M_h_e	M_ala__D_c, M_ala__L_c	M_ser__D_c	M_acmam_c, M_acmama_c, M_ala__D_c, M_h_c, M_na1_c, M_na1_e, M_pi_c, M_pro__L_c, M_pro__L_e, M_ser__D_e	M_acmam_c, M_ala__D_c, M_ala__L_e, M_h_c, M_na1_c, M_pi_c, M_pro__L_c, M_pro__L_e, M_pser__D_c
M_akg_e	M_pphn_c	M_34hpp_c	M_h2co3_c	M_4abut_c, M_co2_c, M_glu__L_c, M_h_c, M_h_e, M_nadh_c, M_phpyr_c, M_tyr__L_c	M_4abut_c, M_co2_c, M_glu__L_c, M_h_e, M_hco3_c, M_nad_c
M_atp_c	M_h2o_c	M_dutp_c	M_thmmp_c	M_2mahmp_c, M_4ampm_c, M_4mpetz_c, M_adp_c, M_dudp_c, M_dump_c, M_nh4_c, M_pi_c, M_ppi_c	M_4ampm_c, M_4mpetz_c, M_adp_c, M_dctp_c, M_h_c
M_atp_c	M_nad_c	M_13dpg_c	M_dhap_c, M_g3p_c	M_3pg_c, M_3php_c, M_adp_c, M_g3p_c, M_glyc3p_c	M_3php_c, M_adp_c, M_g3p_c, M_glyc_c, M_h_c, M_nadh_c, M_nadp_c, M_nadph_c, M_pi_c

1.3 Unique BMCs in modified iIT341

Results table of all found BMCs in the modified network iIT341 of *Helicobacter pylori* 26695. Represented are the IDs of the metabolic species which can be found in the original SBML file `http://bigg.ucsd.edu/models/iIT341`. The given contexts are one pair of examples, other contexts to realize the mapping might be possible.

Sign 1	Sign 2	Meaning 1	Meaning 2	Context 1	Context 2
M_atp_c	M_e4p_c	M_f6p_c	M_pi_c	M_3dhq_c, M_3dhsk_c, M_g3p_c, M_glc__D_c, M_his__L_c, M_pep_c	M_3dhq_c, M_3dhsk_c, M_g3p_c, M_his__L_c, M_his__L_e, M_xu5p__D_c
M_atp_c	M_mlthf_c	M_10fthf_c, M_for_c, M_thf_c	M_nad_c	M_5mthf_c, M_adp_c, M_for_c, M_nadh_c, M_nadph_c, M_thf_c	M_5mthf_c, M_adp_c, M_for_c, M_nadp_c, M_nadph_c, M_nmn_c
M_pi_c, M_ppi_c	M_mlthf_c	M_10fthf_c, M_for_c, M_thf_c	M_nad_c	M_5mthf_c, M_adp_c, M_for_c, M_nadp_c, M_nadph_c, M_nmn_c	M_adp_c, M_for_c, M_nadh_c, M_nadph_c, M_thf_c
M_adp_c	M_mlthf_c	M_10fthf_c, M_for_c, M_thf_c	M_nad_c	M_5mthf_c, M_for_c, M_nadh_c, M_nadph_c, M_pi_c, M_ppi_c, M_thf_c	M_5mthf_c, M_for_c, M_nadp_c, M_nadph_c, M_nmn_c, M_nmn_e, M_pi_c
M_atp_c	M_trdrd_c	M_amp_c, M_pap_c, M_pi_c	M_dadp_c	M_adp_c, M_amp_c, M_datp_c, M_dpcoa_c	M_amp_c, M_damp_c, M_datp_c, M_paps_c
M_4abut_c, M_gln__L_c, M_glu__L_c, M_nh4_c	M_dxyl5p_c	M_akg_c	M_pi_c, M_ppi_c	M_4abut_c, M_4c2me_c, M_ctp_c, M_nadp_c, M_nadph_c, M_nh4_c, M_pi_c, M_pram_c, M_utp_c	M_4abut_c, M_4c2me_c, M_glu__L_c, M_nadph_c, M_nh4_c, M_pi_c, M_pram_c, M_prpp_c
M_atp_c	M_trdrd_c	M_dadp_c	M_dudp_c	M_4mhetz_c, M_4mpetz_c, M_damp_c, M_datp_c, M_pi_c, M_ppi_c, M_trdox_c, M_udp_c	M_4mhetz_c, M_adp_c, M_datp_c, M_dump_c
M_atp_c	M_nadph_c	M_dadp_c	M_pi_c	M_4r5au_c, M_5apru_c, M_datp_c, M_nad_c, M_nadp_c, M_trdox_c, M_trdrd_c	M_4r5au_c, M_adp_c, M_datp_c, M_nad_c, M_nadp_c, M_nmn_c, M_nmn_e, M_trdox_c
M_adp_c	M_nadp_c	M_10fthf_c, M_for_c, M_thf_c	M_fmn_c, M_pi_c, M_ribflv_c	M_fad_c, M_fmnh2_c, M_for_c, M_nadph_c, M_pi_c, M_ppi_c, M_thf_c	M_fad_c, M_for_c, M_mlthf_c, M_nadph_c, M_pi_c, M_ppi_c, M_ribflv_c
M_atp_c	M_nadp_c	M_10fthf_c, M_for_c, M_thf_c	M_fmn_c, M_pi_c, M_ribflv_c	M_fad_c, M_fmnh2_c, M_for_c, M_nadph_c, M_pi_c, M_ppi_c, M_thf_c	M_fad_c, M_for_c, M_mlthf_c, M_nadph_c, M_pi_c, M_ppi_c, M_ribflv_c

M_3ig3p_c, M_g3p_c, M_indole_c	M_acald_c, M_nh4_c, M_pi_c, M_pser__L_c, M_pyr_c, M_ser__L_c	M_13dpg_c	M_trp__L_c	M_acald_c, M_ala__D_c, M_ala__L_c, M_dxyl5p_c, M_indole_c, M_nad_c, M_nadh_c, M_nh4_c, M_pi_c, M_pyr_c	M_acald_c, M_ala__D_c, M_dxyl5p_c, M_g3p_c, M_nad_c, M_nadh_c, M_nh4_c, M_pyr_c, M_ser__L_c
M_3ig3p_c, M_g3p_c, M_indole_c	M_acald_c, M_nh4_c, M_pi_c, M_pser__L_c, M_pyr_c, M_ser__L_c	M_nadh_c	M_trp__L_c	M_13dpg_c, M_acald_c, M_ala__D_c, M_dxyl5p_c, M_indole_c, M_nad_c, M_nh4_c, M_pi_c	M_13dpg_c, M_acald_c, M_dxyl5p_c, M_g3p_c, M_nad_c, M_nh4_c, M_pyr_c, M_ser__L_c
M_2ddg6p_c, M_acald_c, M_dxyl5p_c, M_g3p_c, M_pyr_c	M_hom__L_c	M_23dhdp_c	M_2me4p_c	M_acald_c, M_aspsa_c, M_dhap_c, M_dxyl5p_c, M_g3p_c, M_nad_c, M_nadh_c, M_nadp_c	M_acald_c, M_nad_c, M_nadh_c, M_nadp_c, M_nadph_c, M_pyr_c
M_atp_c	M_pep_c	M_13dpg_c	M_nadp_c	M_3pg_c, M_3php_c, M_g3p_c, M_nadh_c, M_nadph_c, M_pi_c, M_uacgam_c	M_3php_c, M_g3p_c, M_nad_c, M_nadh_c, M_uaccg_c, M_uacgam_c
M_atp_c	M_uacgam_c	M_13dpg_c	M_nadp_c	M_3pg_c, M_3php_c, M_g3p_c, M_nadh_c, M_nadph_c, M_pep_c	M_3php_c, M_g3p_c, M_nad_c, M_nadh_c, M_pep_c
M_glyc3p_c	M_pep_c	M_13dpg_c	M_uamr_c	M_3pg_c, M_3php_c, M_nad_c, M_nadh_c, M_nadp_c, M_nadph_c, M_pi_c, M_uacgam_c	M_3php_c, M_dhap_c, M_g3p_c, M_nad_c, M_nadh_c, M_nadp_c, M_uaccg_c, M_uacgam_c
M_glyc3p_c	M_uacgam_c	M_13dpg_c	M_uamr_c	M_3pg_c, M_3php_c, M_nad_c, M_nadh_c, M_nadp_c, M_nadph_c, M_pep_c, M_pi_c	M_3php_c, M_dhap_c, M_g3p_c, M_nad_c, M_nadh_c, M_nadp_c, M_pep_c, M_uaccg_c
M_atp_c	M_trdox_c	M_4pasp_c	M_dadp_c	M_adp_c, M_aspsa_c, M_datp_c, M_nadp_c, M_nadph_c, M_pro__L_c, M_pro__L_e	M_aspsa_c, M_damp_c, M_datp_c, M_nadph_c, M_pi_c
M_1pyr5c_c	M_adp_c	M_4abut_c, M_glu__L_c	M_nadp_c	M_4abut_c, M_akg_c, M_cbp_c, M_nad_c, M_nadh_c, M_nh4_c, M_pi_c	M_4abut_c, M_akg_c, M_gln__L_e, M_nadh_c, M_nadph_c, M_nh4_c, M_pi_c
M_1pyr5c_c	M_atp_c	M_4abut_c, M_glu__L_c	M_nadp_c	M_4abut_c, M_adp_c, M_akg_c, M_cbp_c, M_nad_c	M_4abut_c, M_adp_c, M_akg_c, M_gln__L_e, M_nadh_c, M_nadph_c
M_1pyr5c_c	M_pi_c	M_4abut_c, M_glu__L_c	M_nadp_c	M_4abut_c, M_adp_c, M_akg_c, M_cbp_c, M_nad_c	M_4abut_c, M_adp_c, M_akg_c, M_gln__L_e, M_nadh_c, M_nadph_c
M_atp_c	M_nad_c	M_13dpg_c	M_dhap_c, M_g3p_c	M_3pg_c, M_3php_c, M_adp_c, M_g3p_c, M_glyc3p_c	M_3php_c, M_g3p_c, M_glyc_c, M_nadh_c, M_nadp_c, M_nadph_c, M_pheme_c, M_pheme_e, M_pi_c