

**Table S1.** Metabolite measurement in OPM2 metabolomics

Name	KEGG.ID	Condition	Av	Std	CV	Exp1	Exp2	Exp3	ANOVA	Sig	Norm_Av	Norm_Std
13BPG	C00236	Ctrl	11.6289482	1.41199284	0.12142051	10.026838	12.6920258	12.1679809	1.33E-11	***	1	0.12142051
13BPG	C00236	HK2-ASO1	16.6961845	2.02843822	0.12149112	15.3484373	15.711069	19.0290472	1.33E-11	***	1.4357433	0.17443007
13BPG	C00236	DPI	6.26015034	3.13106756	0.50015852	2.96546023	6.6181751	9.19681571	1.33E-11	***	0.53832472	0.2692477
13BPG	C00236	MET	6.26527766	0.68447681	0.10924924	6.70041152	6.61911461	5.47630685	1.33E-11	***	0.53876563	0.05885973
13BPG	C00236	PER	0	0	NA	0	0	0	1.33E-11	***	0	0
13BPG	C00236	HK2-ASO1-DPI	0	0	NA	0	0	0	1.33E-11	***	0	0
13BPG	C00236	HK2-ASO1-DPI-PER	0	0	NA	0	0	0	1.33E-11	***	0	0
13BPG	C00236	HK2-ASO1-MET	0	0	NA	0	0	0	1.33E-11	***	0	0
13BPG	C00236	HK2-ASO1-MET-PER	0	0	NA	0	0	0	1.33E-11	***	0	0
2-AB	C02356	Ctrl	2.37237399	0.18933067	0.07980642	2.15420544	2.46929425	2.4936223	0.92097757		1	0.07980642
2-AB	C02356	HK2-ASO1	2.55183821	0.60772803	0.23815304	NA	2.12210959	2.98156682	0.92097757		1.07564752	0.25616873
2-AB	C02356	DPI	2.23841449	0.75505626	0.33731745	1.58668893	3.06582518	2.06272937	0.92097757		0.94353357	0.31827033
2-AB	C02356	MET	1.99712714	0.95957392	0.48047713	3.09583231	1.32360805	1.57194104	0.92097757		0.84182643	0.40447835
2-AB	C02356	PER	2.17425301	0.42415349	0.1950801	1.86862731	2.65850346	1.99562827	0.92097757		0.9164883	0.17878863
2-AB	C02356	HK2-ASO1-DPI	2.29257673	0.92993368	0.40562816	3.34004646	1.56419088	1.97349284	0.92097757		0.96636396	0.39198444
2-AB	C02356	HK2-ASO1-DPI-PER	2.3097456	1.4241753	0.61659401	0.86561531	2.35053177	3.71308973	0.92097757		0.97360096	0.60031652
2-AB	C02356	HK2-ASO1-MET	1.71602326	1.08257534	0.63086286	2.9489657	0.92106091	1.27804318	0.92097757		0.72333589	0.45632575
2-AB	C02356	HK2-ASO1-MET-PER	1.44656912	0.47051913	0.32526557	NA	1.11386186	1.77927639	0.92097757		0.60975593	0.19833261
2-HG	C02630	Ctrl	263.462787	14.1857974	0.05384365	249.139539	263.741802	277.507018	4.02E-11	***	1	0.05384365
2-HG	C02630	HK2-ASO1	361.838502	4.50390031	0.01244727	NA	365.02324	358.653763	4.02E-11	***	1.37339511	0.01709502
2-HG	C02630	DPI	292.462164	1.90770744	0.00652076	292.865375	294.135391	290.385725	4.02E-11	***	1.11007011	0.0072385
2-HG	C02630	MET	297.280638	8.43992223	0.02839042	298.350928	288.356623	305.134363	4.02E-11	***	1.12835912	0.03203459
2-HG	C02630	PER	258.030494	18.3087238	0.07095566	262.806808	273.477681	237.806994	4.02E-11	***	0.97939818	0.06949264
2-HG	C02630	HK2-ASO1-DPI	362.718901	12.8010362	0.03529189	376.35306	360.846393	350.957248	4.02E-11	***	1.37673675	0.04858764
2-HG	C02630	HK2-ASO1-DPI-PER	233.913983	8.10613982	0.03465436	241.968874	225.757548	234.015528	4.02E-11	***	0.88784449	0.03076768
2-HG	C02630	HK2-ASO1-MET	206.85331	23.4116061	0.11317975	233.08499	188.078185	199.396754	4.02E-11	***	0.78513293	0.08886115
2-HG	C02630	HK2-ASO1-MET-PER	182.294112	6.93116142	0.03802186	187.510504	184.942621	174.429212	4.02E-11	***	0.69191598	0.02630793
2-KB	C00109	Ctrl	0	0	NA	0	0	0	8.40E-18	***	NA	NA
2-KB	C00109	HK2-ASO1	0	0	NA	0	0	0	8.40E-18	***	NA	NA
2-KB	C00109	DPI	0	0	NA	0	0	0	8.40E-18	***	NA	NA
2-KB	C00109	MET	0	0	NA	0	0	0	8.40E-18	***	NA	NA
2-KB	C00109	PER	0	0	NA	0	0	0	8.40E-18	***	NA	NA
2-KB	C00109	HK2-ASO1-DPI	0	0	NA	0	0	0	8.40E-18	***	NA	NA
2-KB	C00109	HK2-ASO1-DPI-PER	0	0	NA	0	0	0	8.40E-18	***	NA	NA
2-KB	C00109	HK2-ASO1-MET	0.1206086	NA	NA	NA	0.1206086	NA	8.40E-18	***	Inf	NA
2-KB	C00109	HK2-ASO1-MET-PER	0.08938039	0.00857155	0.09589963	NA	0.09544139	0.08331939	8.40E-18	***	Inf	Inf
2-Oxoadipate	C00322	Ctrl	0.46936362	0.10349171	0.22049367	0.48789397	0.35785851	0.56233837	1.69E-05	***	1	0.22049367
2-Oxoadipate	C00322	HK2-ASO1	0.46114489	0.04613323	0.10004064	0.50381542	0.46742654	0.41219271	1.69E-05	***	0.98248964	0.09828889
2-Oxoadipate	C00322	DPI	0.37073405	0.16076273	0.43363357	0.30356152	0.55418874	0.2544519	1.69E-05	***	0.78986533	0.34251212
2-Oxoadipate	C00322	MET	0.56074654	0.15640907	0.27893008	0.73885347	0.49762065	0.4457655	1.69E-05	***	1.19469536	0.33323677
2-Oxoadipate	C00322	PER	0.46484799	0.1915643	0.41212094	0.24382841	0.56763527	0.5830803	1.69E-05	***	0.99037926	0.40813623
2-Oxoadipate	C00322	HK2-ASO1-DPI	1.17000929	0.46933114	0.40113454	0.96327835	0.83953324	1.70721627	1.69E-05	***	2.49275667	0.9999308
2-Oxoadipate	C00322	HK2-ASO1-DPI-PER	1.15203046	0.31471348	0.27318156	0.91835732	1.50989031	1.02784376	1.69E-05	***	2.45445198	0.0551102
2-Oxoadipate	C00322	HK2-ASO1-MET	1.29712156	0.27094065	0.20887838	1.09034365	1.60383539	1.19718564	1.69E-05	***	2.763575	0.57725106
2-Oxoadipate	C00322	HK2-ASO1-MET-PER	1.74832493	0.33799362	0.19333226	2.09369631	1.41822689	1.7330516	1.69E-05	***	3.7248838	0.7201104
2-Oxosuccinamate	C02362	Ctrl	0.51280278	0.63654357	1.24130287	1.24293483	0.2120041	0.07446942	0.00160914	**	1	1.24130287
2-Oxosuccinamate	C02362	HK2-ASO1	0.26916034	0.03589988	0.13337729	NA	0.2437753	0.29454539	0.00160914	**	0.52488082	0.07000718
2-Oxosuccinamate	C02362	DPI	0.62268688	0.35746909	0.57407518	0.98589433	0.61091959	0.27124674	0.00160914	**	1.2142814	0.69708882
2-Oxosuccinamate	C02362	MET	0.28924404	0.18752134	0.6483153	0.42184166	NA	0.15664643	0.00160914	**	0.56404539	0.36567925
2-Oxosuccinamate	C02362	PER	1.09086659	1.12451387	1.03084454	2.3821618	0.56332472	0.32711325	0.00160914	**	2.1272634	2.19287786
2-Oxosuccinamate	C02362	HK2-ASO1-DPI	3.04266629	0.98988939	0.32533617	1.91104272	3.46900741	3.74794874	0.00160914	**	5.9334044	1.93035104
2-Oxosuccinamate	C02362	HK2-ASO1-DPI-PER	0.97503822	0.27462594	0.28165659	1.27891485	0.90160885	0.74459097	0.00160914	**	1.90139027	0.5355391
2-Oxosuccinamate	C02362	HK2-ASO1-MET	0.44291461	0.37346704	0.84320325	0.08137696	0.42010169	0.82726518	0.00160914	**	0.86371335	0.7282859
2-Oxosuccinamate	C02362	HK2-ASO1-MET-PER	0.54521102	0.1047105	0.192055	0.62802848	0.58009279	0.42751179	0.00160914	**	1.06319825	0.20419254
3PG	C00197	Ctrl	33.4572451	2.20060397	0.06577362	30.9613835	34.2920606	35.1182911	4.86E-07	***	1	0.06577362
3PG	C00197	HK2-ASO1	22.3912763	5.21125096	0.23273577	28.3423309	18.6438369	20.187661	4.86E-07	***	0.66925045	0.15575852
3PG	C00197	DPI	32.0862942	4.39222429	0.13688786	37.1321529	29.1205139	30.0062159	4.86E-07	***	0.9590238	0.13127872
3PG	C00197	MET	22.3683639	4.2137867	0.18838152	17.8021798	24.8599964	24.7419156	4.86E-07	***	0.66856562	0.15294542
3PG	C00197	PER	46.4614848	3.01010344	0.06478707	49.3375807	43.3332366	46.7136372	4.86E-07	***	1.38868232	0.08996866
3PG	C00197	HK2-ASO1-DPI	21.9481848	0.9593976	0.04371193	22.95011	21.0378897	21.8565547	4.86E-07	***	0.65606094	0.02867533
3PG	C00197	HK2-ASO1-DPI-PER	11.7873497	2.92506793	0.24815315	12.6632019	8.5244131	14.1744342	4.86E-07	***	0.35231083	0.08742704
3PG	C00197	HK2-ASO1-MET	22.1406235	5.47804678	0.24742062	27.6501323	16.6945904	22.0771476	4.86E-07	***	0.66175871	0.16373275
3PG	C00197	HK2-ASO1-MET-PER	25.3152907	5.45413996	0.21544844	23.8960365	31.3387611	20.7110744	4.86E-07	***	0.756646	0.1630182
4-OH-PheLac	C03672	Ctrl	69.2304088	4.78254862	0.06908162	64.9816141	68.2997155	74.4098968	4.71E-18	***	1	0.06908162
4-OH-PheLac	C03672	HK2-ASO1	14.7435964	1.23389954	0.08369054	NA	13.8710977	15.6160952	4.71E-18	***	0.21296417	0.01782309
4-OH-PheLac	C03672	DPI	136.426063	5.9846297	0.0438672	141.528508	129.838805	137.910875	4.71E-18	***	1.97060894	0.0864451
4-OH-PheLac	C03672	MET	154.550422	10.3943278	0.06725525	158.534823	162.36309	142.753352	4.71E-18	***	2.2324066	0.15014107
4-OH-PheLac	C03672	PER	82.44516	5.6574809	0.06862114	79.3396442	88.9752584	79.0205774	4.71E-18	***	1.19088073	0.08171959
4-OH-PheLac	C03672	HK2-ASO1-DPI	18.5690753	1.82224734	0.09813345	17.8027199	17.2551644	20.6493417	4.71E-18	***	0.26822137	0.02632149
4-OH-PheLac	C03672	HK2-ASO1-DPI-PER	5.90452128	1.36732267	0.23157215	7.44178596	4.82414501	5.44763288	4.71E-18	***	0.08528797	0.01975032
4-OH-PheLac	C03672	HK2-ASO1-MET	4.99301748	0.42529195	0.08517734	4.55589489	5.0					

5M-adenosine	C00170	Ctrl	468.087125	42.5070888	0.09081021	502.440673	481.270323	420.550379	2.42E-08	***		1	0.09081021
5M-adenosine	C00170	HK2-ASO1	572.447001	81.9161929	0.1430983	562.777207	478.226442	612.337353	2.42E-08	***	1.22294968	0.17500202	
5M-adenosine	C00170	DPI	540.139255	47.9248	0.08872675	563.058524	572.300908	485.058332	2.42E-08	***	1.15392889	0.10238436	
5M-adenosine	C00170	MET	415.909765	29.4503232	0.07080941	438.808728	426.232965	382.687602	2.42E-08	***	0.88853067	0.06291633	
5M-adenosine	C00170	PER	477.335914	57.0119135	0.11943772	505.732934	514.572462	411.702346	2.42E-08	***	1.01975869	0.12179765	
5M-adenosine	C00170	HK2-ASO1-DPI	839.123949	49.2492894	0.05869132	787.534662	844.196583	885.640601	2.42E-08	***	1.79266616	0.10521394	
5M-adenosine	C00170	HK2-ASO1-DPI-PER	869.805816	86.8742521	0.09987775	968.07136	838.13866	803.207427	2.42E-08	***	1.8582135	0.18559419	
5M-adenosine	C00170	HK2-ASO1-MET	870.239874	35.8381486	0.04118192	911.416123	846.079589	853.223911	2.42E-08	***	1.8591408	0.07656299	
5M-adenosine	C00170	HK2-ASO1-MET-PER	585.697249	93.8609578	0.16025508	687.392481	567.306364	502.392903	2.42E-08	***	1.25125691	0.20052027	
A	C00212	Ctrl	9.68986202	7.36259209	0.75982424	6.72265084	4.27386576	18.0730695	0.02785008	*	1	0.75982424	
A	C00212	HK2-ASO1	4.0404355	1.88045251	0.46540837	2.31855788	3.75575015	6.04699848	0.02785008	*	0.41697555	0.19406391	
A	C00212	DPI	4.8478077	1.60668841	0.33142577	6.48311949	3.27136054	4.78894308	0.02785008	*	0.50029688	0.16581128	
A	C00212	MET	5.58993877	1.19980849	0.21463714	6.246183	6.31848503	4.20514829	0.02785008	*	0.57688528	0.12382101	
A	C00212	PER	12.1492771	11.7614445	0.96807102	6.74095811	4.06482496	25.6420483	0.02785008	*	1.25381322	1.21378865	
A	C00212	HK2-ASO1-DPI	17.1396318	9.871131353	0.57593498	7.36662763	16.9458659	27.1064019	0.02785008	*	1.76882104	0.10872591	
A	C00212	HK2-ASO1-DPI-PER	1.25604801	0.41586461	0.33108974	1.49543209	1.49686232	0.77584963	0.02785008	*	0.12962496	0.0429175	
A	C00212	HK2-ASO1-MET	1.02075292	1.00501198	0.98457908	0.36449115	0.52000538	2.17776223	0.02785008	*	0.10534236	0.10371788	
A	C00212	HK2-ASO1-MET-PER	0.39352054	0.28207606	0.71680136	0.71490819	0.27864582	0.18700762	0.02785008	*	0.04061157	0.02911043	
a-KG	C00026	Ctrl	35.4460735	5.88125182	0.16592111	41.004292	36.0461326	29.2877959	9.75E-13	***	1	0.16592111	
a-KG	C00026	HK2-ASO1	24.8124507	1.11079094	0.04476748	NA	24.0270029	25.5978985	9.75E-13	***	0.70000562	0.03133749	
a-KG	C00026	DPI	122.653608	19.2431393	0.15689012	131.712808	135.695194	100.552822	9.75E-13	***	3.46028758	0.54288493	
a-KG	C00026	MET	140.316954	7.10340096	0.05062397	137.868784	134.761426	148.320652	9.75E-13	***	3.9586036	0.20040022	
a-KG	C00026	PER	47.2156281	5.97531088	0.12655367	47.9177241	52.8088639	40.9202783	9.75E-13	***	1.33204114	0.16857469	
a-KG	C00026	HK2-ASO1-DPI	21.721765	2.86397799	0.13184831	18.6650391	24.3431467	22.1571091	9.75E-13	***	0.6128116	0.08079817	
a-KG	C00026	HK2-ASO1-DPI-PER	19.3976096	5.32834588	0.27469085	22.626939	13.2475459	22.3183438	9.75E-13	***	0.54724283	0.15322426	
a-KG	C00026	HK2-ASO1-MET	27.4718873	3.90895199	0.14228917	29.1113064	30.2941737	23.0101818	9.75E-13	***	0.7750333	0.11027884	
a-KG	C00026	HK2-ASO1-MET-PER	20.9118208	2.56627758	0.12271899	18.0808349	21.569079	23.0855484	9.75E-13	***	0.58996156	0.07239949	
Ac-carnitine	C02571	Ctrl	384.780749	14.1998528	0.03690375	391.938934	393.976871	368.426442	3.32E-18	***	1	0.03690375	
Ac-carnitine	C02571	HK2-ASO1	158.565313	14.922285	0.09410813	156.471445	144.80055	174.423944	3.32E-18	***	0.41209264	0.03878127	
Ac-carnitine	C02571	DPI	682.56722	45.5786211	0.06677529	652.95523	659.693536	735.052895	3.32E-18	***	1.77391208	0.11845349	
Ac-carnitine	C02571	MET	620.945344	36.9565464	0.05951659	612.529674	661.383949	588.922409	3.32E-18	***	1.61376406	0.09604573	
Ac-carnitine	C02571	PER	399.513247	25.6445155	0.0641894	381.879681	428.93183	387.728228	3.32E-18	***	1.03828803	0.06664709	
Ac-carnitine	C02571	HK2-ASO1-DPI	146.661371	7.94511493	0.05417319	152.320467	137.578358	150.085289	3.32E-18	***	0.38115569	0.02064842	
Ac-carnitine	C02571	HK2-ASO1-DPI-PER	55.3405375	7.08109697	0.12795497	63.2107207	49.4852646	53.3256272	3.32E-18	***	0.14382356	0.01840294	
Ac-carnitine	C02571	HK2-ASO1-MET	54.4951261	4.76385972	0.08741809	53.4908665	59.6810532	50.3134588	3.32E-18	***	0.14162644	0.01238071	
Ac-carnitine	C02571	HK2-ASO1-MET-PER	39.5975196	6.1614621	0.15560222	45.3519535	40.3436275	33.0969778	3.32E-18	***	0.10290931	0.01601922	
Ac-choline	C01996	Ctrl	89.6378666	3.78591248	0.04223564	87.5594554	87.3464132	94.007731	1.99E-15	***	1	0.04223564	
Ac-choline	C01996	HK2-ASO1	69.8685327	8.45880024	0.12106738	77.1999147	60.6136172	71.792066	1.99E-15	***	0.77945332	0.09436637	
Ac-choline	C01996	DPI	91.8528084	3.59763616	0.03916741	88.7082194	91.0742188	95.775987	1.99E-15	***	1.02470989	0.04013523	
Ac-choline	C01996	MET	74.8598386	5.30789594	0.07090445	78.1429779	77.7004009	68.7361371	1.99E-15	***	0.83513633	0.05921488	
Ac-choline	C01996	PER	107.506161	5.80146961	0.05396407	102.640473	113.926594	105.951418	1.99E-15	***	1.19933869	0.06472119	
Ac-choline	C01996	HK2-ASO1-DPI	42.8841816	1.91797179	0.04472446	43.8119675	40.6787302	44.1618471	1.99E-15	***	0.47841591	0.02139687	
Ac-choline	C01996	HK2-ASO1-DPI-PER	27.0578092	3.1494398	0.1163967	30.187059	23.8885604	27.0978083	1.99E-15	***	0.30185691	0.03513515	
Ac-choline	C01996	HK2-ASO1-MET	13.6021672	4.09290694	0.30090109	18.0611631	12.7290998	10.0162386	1.99E-15	***	0.15174577	0.04566047	
Ac-choline	C01996	HK2-ASO1-MET-PER	13.9468099	2.45550722	0.17606228	16.7043962	13.1392465	11.9967869	1.99E-15	***	0.15559061	0.02739364	
Acetyl-CoA	C00024	Ctrl	2.34035926	0.40226707	0.17188261	2.63673045	2.50191854	1.8824288	3.58E-06	***	1	0.17188261	
Acetyl-CoA	C00024	HK2-ASO1	1.59029883	0.09610831	0.06043412	1.5316959	1.53798485	1.70121574	3.58E-06	***	0.67951056	0.04106562	
Acetyl-CoA	C00024	DPI	2.18362177	0.18678788	0.08554004	2.02220898	2.14043651	2.38821983	3.58E-06	***	0.93302845	0.07981163	
Acetyl-CoA	C00024	MET	1.54880744	0.07216314	0.04659271	1.62908941	1.5279958	1.48933712	3.58E-06	***	0.66178192	0.03083422	
Acetyl-CoA	C00024	PER	1.88314216	0.82095298	0.43594849	2.30936479	2.40332103	0.93674066	3.58E-06	***	0.80463807	0.35078075	
Acetyl-CoA	C00024	HK2-ASO1-DPI	1.28252205	0.07750515	0.06043183	1.24177564	1.23388913	1.37190138	3.58E-06	***	0.54800221	0.03311677	
Acetyl-CoA	C00024	HK2-ASO1-DPI-PER	0.81231728	0.02810326	0.03459641	0.83346985	0.82305344	0.78042856	3.58E-06	***	0.34709085	0.0120081	
Acetyl-CoA	C00024	HK2-ASO1-MET	0.58678289	0.12984278	0.22127909	0.72653116	0.56394026	0.46987723	3.58E-06	***	0.25072342	0.05547985	
Acetyl-CoA	C00024	HK2-ASO1-MET-PER	0.48590834	0.03685393	0.07584543	0.48499503	0.52321044	0.44951956	3.58E-06	***	0.20762126	0.01574812	
Aconitate	C00417	Ctrl	59.2261376	7.27871723	0.13049504	64.828663	62.4408414	50.4089085	5.01E-14	***	1	0.13049504	
Aconitate	C00417	HK2-ASO1	31.3315996	3.68255207	0.1175347	31.2924399	27.6687562	35.0335489	5.01E-14	***	0.52901643	0.06217782	
Aconitate	C00417	DPI	40.5457726	2.14259669	0.0528439	43.0131875	39.1551636	39.4689665	5.01E-14	***	0.68459255	0.03617554	
Aconitate	C00417	MET	30.1922638	4.71615737	0.15620417	32.0255327	33.7165172	24.8347416	5.01E-14	***	0.50979398	0.07962966	
Aconitate	C00417	PER	53.1003667	3.49111185	0.06574553	55.7895846	54.3565157	49.1549997	5.01E-14	***	0.8965698	0.05894546	
Aconitate	C00417	HK2-ASO1-DPI	12.9443043	1.19098871	0.09200871	11.5765162	13.7519756	13.5044211	5.01E-14	***	0.21855729	0.02010917	
Aconitate	C00417	HK2-ASO1-DPI-PER	2.64843809	0.92400724	0.34888761	3.68312583	2.35660551	1.90558293	5.01E-14	***	0.04471739	0.01560134	
Aconitate	C00417	HK2-ASO1-MET	1.8696273	0.21974145	0.18512919	1.31890701	1.30868537	0.9332958	5.01E-14	***	0.0200412	0.00371021	
Aconitate	C00417	HK2-ASO1-MET-PER	0.37471388	0.23537224	0.62813857	0.12737272	0.59593883	0.40083008	5.01E-14	***	0.00632683	0.00397413	
Adenine	C00147	Ctrl	11.8510498	12.5705799	1.06071446	2.98237945	6.33402857	26.2367414	0.02418632	*	1	1.06071446	
Adenine	C00147	HK2-ASO1	8.03675733	1.16101549	0.14446318	7.27353939	7.4638608	9.3728718	0.02418632	*	0.67814729	0.09796731	
Adenine	C00147	DPI	5.1636169	2.95206939	0.57170573	2.90461315	4.0823745	8.50386304	0.02418632	*	0.43570966	0.24909771	
Adenine	C00147	MET	17.3869591	8.36928307	0.48135404	21.2744161	23.1055186	7.78094257	0.02418632	*	1.46712396	0.70620605	
Adenine	C00147	PER	20.9632718	16.8550553	0.8040279	3.58481267	22.0640391	37.2409635	0.02418632	*	1.76889576	1.42224154	
Adenine	C00147	HK2-ASO1-DPI	1.15449369	0.46817852	0.40552714	1.29768263	1.53435666	0.63144177	0.02418632	*	0.097417	0.03950524	
Adenine	C00147	HK2-ASO1-DPI-PER	0.5475997	0.34561052	0.63113717	0.92975818	0.45608351	0.2569574	0.02418632	*	0.04620685	0.02916286	
Adenine	C00147	HK2-ASO1-MET	1.60290839	1.78370393	1.11279218	0.87163038	0.30105705	3.63603775	0.02418632	*	0.13525455	0.15051072	
Adenine	C00147	HK2-ASO1-MET-PER	0.79918947	0.19313895	0.24166854	0.92985865	0.89036951	0.57734025	0.02418632	*	0.06743618	0.0162972	
ADP	C00008	Ctrl	234.316084	11.2703711	0.04809901	221							

ADP/ATP	NA	DPI	0.8518848	0.08126032	0.09538883	0.8042695	0.80567227	0.94571264	5.50E-17	***	1.50114293	0.14319231
ADP/ATP	NA	MET	1.13822945	0.05296094	0.04652926	1.19431824	1.08908062	1.13128949	5.50E-17	***	2.00572317	0.09332476
ADP/ATP	NA	PER	0.5248081	0.02998388	0.05713304	0.52114604	0.49682344	0.55645482	5.50E-17	***	0.92478697	0.05283589
ADP/ATP	NA	HK2-ASO1-DPI	0.91294129	0.02041199	0.0223585	0.93402029	0.91153448	0.89326909	5.50E-17	***	1.60873318	0.03596885
ADP/ATP	NA	HK2-ASO1-DPI-PER	2.47145572	0.19071733	0.07716801	2.2716141	2.4912479	2.65150515	5.50E-17	***	4.35505863	0.336607123
ADP/ATP	NA	HK2-ASO1-MET	3.01998536	0.20687884	0.06850326	2.97484294	2.8394052	3.24570793	5.50E-17	***	5.32164635	0.36455012
ADP/ATP	NA	HK2-ASO1-MET-PER	4.32934641	0.30192402	0.06973894	4.05067521	4.28725742	4.65010666	5.50E-17	***	7.62892789	0.53203332
Ala	C00041	Ctrl	1411.75481	65.860276	0.04665136	1342.71665	1473.89409	1418.6537	1.45E-12	***	1	0.04665136
Ala	C00041	HK2-ASO1	792.987197	58.7844455	0.07413038	860.760065	755.823595	762.377931	1.45E-12	***	0.5617032	0.04163927
Ala	C00041	DPI	1536.79095	225.326202	0.14662124	1293.48305	1578.61479	1738.27501	1.45E-12	***	1.08856789	0.15960718
Ala	C00041	MET	1481.95029	147.349259	0.09942929	1652.09331	1396.31475	1397.4428	1.45E-12	***	1.04972214	0.10437312
Ala	C00041	PER	1626.33591	87.9943187	0.05410587	1541.051	1716.80998	1621.14674	1.45E-12	***	1.15199601	0.06232975
Ala	C00041	HK2-ASO1-DPI	796.54156	93.5379641	0.11743011	858.425981	842.261529	688.937172	1.45E-12	***	0.56422089	0.06625652
Ala	C00041	HK2-ASO1-DPI-PER	359.324559	31.3142142	0.08714744	385.515167	324.639465	367.819045	1.45E-12	***	0.25452335	0.02218106
Ala	C00041	HK2-ASO1-MET	337.811654	70.3314836	0.20819733	397.676718	260.353885	355.40436	1.45E-12	***	0.23928493	0.04981848
Ala	C00041	HK2-ASO1-MET-PER	282.70424	33.2861645	0.11774201	275.818632	318.894716	253.399371	1.45E-12	***	0.20025024	0.02357787
AMP	C00020	Ctrl	67.4838101	20.9827861	0.31093067	58.8175805	52.222915	91.4115583	4.02E-10	***	1	0.31093067
AMP	C00020	HK2-ASO1	106.867672	13.0288184	0.12191543	121.270467	95.9020051	103.430543	4.02E-10	***	1.58360459	0.19306584
AMP	C00020	DPI	159.8143	13.3781143	0.08371037	174.07474	147.540752	157.827409	4.02E-10	***	2.36818727	0.19824183
AMP	C00020	MET	218.438158	33.3757799	0.15279281	245.79014	228.274814	181.249522	4.02E-10	***	3.23689723	0.49457462
AMP	C00020	PER	100.008082	6.93165017	0.06931099	105.436908	92.2001771	102.387161	4.02E-10	***	1.48195666	0.10271575
AMP	C00020	HK2-ASO1-DPI	136.170043	3.3232395	0.02440569	135.478269	133.247051	139.784809	4.02E-10	***	2.01781795	0.04924624
AMP	C00020	HK2-ASO1-DPI-PER	61.5329624	7.44062371	0.12092094	66.7959405	53.0202595	64.7826873	4.02E-10	***	0.91181814	0.11025791
AMP	C00020	HK2-ASO1-MET	68.7169149	0.92335898	0.01343741	67.6564412	69.151556	69.3427474	4.02E-10	***	1.0182726	0.01368267
AMP	C00020	HK2-ASO1-MET-PER	38.8653357	6.27839043	0.16154216	45.3441222	38.4432427	32.8086423	4.02E-10	***	0.57592089	0.09303551
AMP/ATP	NA	Ctrl	0.16511177	0.05966853	0.36138267	0.14510609	0.11801677	0.23221245	3.49E-13	***	1	0.36138267
AMP/ATP	NA	HK2-ASO1	0.29234166	0.00021726	0.00074318	0.29252662	0.29239559	0.29210239	3.49E-13	***	1.77056824	0.00131586
AMP/ATP	NA	DPI	0.40258702	0.05296541	0.13156264	0.45670634	0.40019837	0.40019837	3.49E-13	***	2.43826966	0.02187518
AMP/ATP	NA	MET	0.77159511	0.06169576	0.07995872	0.81810662	0.79507131	0.7016074	3.49E-13	***	4.67316842	0.37366055
AMP/ATP	NA	PER	0.23000062	0.02741609	0.11920006	0.24503227	0.19835641	0.24661317	3.49E-13	***	1.39299953	0.16604563
AMP/ATP	NA	HK2-ASO1-DPI	0.62644562	0.03594419	0.05737799	0.58501057	0.64508047	0.64924582	3.49E-13	***	3.79407003	0.21769612
AMP/ATP	NA	HK2-ASO1-DPI-PER	1.43802166	0.16215339	0.11276144	1.2933964	1.40734706	1.61332153	3.49E-13	***	8.70938311	0.98208254
AMP/ATP	NA	HK2-ASO1-MET	2.20144334	0.49741793	0.22559082	1.77192191	2.08596458	2.74644351	3.49E-13	***	13.3330491	3.01261339
AMP/ATP	NA	HK2-ASO1-MET-PER	3.06956185	0.0578335	0.01884096	3.07149048	3.12640692	3.01078816	3.49E-13	***	18.5908119	0.35026888
Arg	C00062	Ctrl	3531.63983	256.679221	0.07267999	3281.00498	3519.95049	3793.96401	0.00010055	***	1	0.07267999
Arg	C00062	HK2-ASO1	4910.60579	163.618312	0.03331937	NA	5026.30141	4794.91017	0.00010055	***	1.39046053	0.04632927
Arg	C00062	DPI	4737.60535	725.058039	0.15304315	3999.64763	4764.13282	5449.03561	0.00010055	***	1.34147466	0.20530351
Arg	C00062	MET	5081.57022	566.440461	0.11146957	5687.46813	4565.26573	4991.97678	0.00010055	***	1.43886989	0.16039021
Arg	C00062	PER	3694.84704	168.406522	0.04557875	3888.94446	3608.06479	3587.53187	0.00010055	***	1.04621287	0.04768508
Arg	C00062	HK2-ASO1-DPI	7284.439	156.862338	0.02153389	7426.68228	7310.43032	7116.20438	0.00010055	***	2.06262228	0.04441629
Arg	C00062	HK2-ASO1-DPI-PER	5244.8749	664.471334	0.12668964	5864.91564	4543.46692	5326.24214	0.00010055	***	1.48511036	0.1881481
Arg	C00062	HK2-ASO1-MET	5884.29942	1348.16063	0.22911149	5857.78392	4549.59211	7245.52222	0.00010055	***	1.66616634	0.38173786
Arg	C00062	HK2-ASO1-MET-PER	4789.2125	645.750763	0.13483444	4509.28944	5527.69417	4330.65388	0.00010055	***	1.35608746	0.18284729
Arg-Succ	C03406	Ctrl	13.398751	0.25237994	0.01883608	13.2604576	13.245745	13.6900504	1.98E-14	***	1	0.18838608
Arg-Succ	C03406	HK2-ASO1	8.93168256	1.42537773	0.1595867	8.48340955	7.78432712	10.527311	1.98E-14	***	0.66660561	0.10638139
Arg-Succ	C03406	DPI	38.6379349	3.82652579	0.09903546	42.981062	37.1701005	35.7626422	1.98E-14	***	2.88369676	0.28558825
Arg-Succ	C03406	MET	41.0659793	3.53419376	0.08606135	41.8676391	44.1304822	37.1988165	1.98E-14	***	3.064911	0.26377039
Arg-Succ	C03406	PER	19.4949202	0.70453669	0.0361395	19.8719193	19.9307409	18.6821005	1.98E-14	***	1.45498041	0.05258227
Arg-Succ	C03406	HK2-ASO1-DPI	14.2450148	0.77627323	0.05449438	14.1102116	13.5449717	15.0798609	1.98E-14	***	1.0631599	0.05793624
Arg-Succ	C03406	HK2-ASO1-DPI-PER	10.2790015	1.53818	0.14964294	11.7399475	8.6737569	10.4233001	1.98E-14	***	0.76716117	0.11480025
Arg-Succ	C03406	HK2-ASO1-MET	8.02526976	1.01132882	0.12601805	8.74036792	8.46725926	6.86818209	1.98E-14	***	0.59895656	0.07547934
Arg-Succ	C03406	HK2-ASO1-MET-PER	6.27198454	1.00908642	0.1608879	7.01120988	6.68238137	5.12236237	1.98E-14	***	0.46810218	0.07531198
Asn	C00152	Ctrl	1632.2737	73.4370251	0.04499063	1558.18777	1633.5892	1705.04415	6.99E-10	***	1	0.04499063
Asn	C00152	HK2-ASO1	1899.5524	121.820447	0.06413113	1988.74639	1760.7559	1949.15489	6.99E-10	***	1.16374625	0.07463237
Asn	C00152	DPI	1827.19788	185.126033	0.1013169	1702.73513	1738.91874	2039.93977	6.99E-10	***	1.11941881	0.11341605
Asn	C00152	MET	1768.7126	101.427315	0.05734528	1885.81077	1712.03812	1708.28891	6.99E-10	***	1.08358825	0.06213867
Asn	C00152	PER	1736.75667	21.0368937	0.01211275	1733.55027	1717.21269	1717.50705	6.99E-10	***	1.06401069	0.01288809
Asn	C00152	HK2-ASO1-DPI	1820.25531	117.148288	0.06435816	1718.91754	1793.32449	1948.52389	6.99E-10	***	1.11516549	0.07177
Asn	C00152	HK2-ASO1-DPI-PER	1085.71491	122.001707	0.11236993	1193.58411	953.309978	1110.25065	6.99E-10	***	0.66515494	0.07474341
Asn	C00152	HK2-ASO1-MET	1019.59572	162.571669	0.15944719	954.259353	899.856834	1204.67099	6.99E-10	***	0.62464752	0.09959829
Asn	C00152	HK2-ASO1-MET-PER	779.881356	42.635869	0.05466969	816.956112	789.395969	733.291988	6.99E-10	***	0.47778835	0.02612054
Asp	C00049	Ctrl	646.108464	46.9050829	0.0725963	592.239449	677.909561	668.176383	1.01E-12	***	1	0.0725963
Asp	C00049	HK2-ASO1	3403.32697	412.31129	0.12114948	NA	3111.77886	3694.87508	1.01E-12	***	5.26742359	0.63814562
Asp	C00049	DPI	501.058856	50.3454622	0.10047814	443.689964	537.884141	521.602463	1.01E-12	***	0.7755027	0.07792107
Asp	C00049	MET	409.221971	24.6438414	0.06022121	437.655068	394.011354	395.999491	1.01E-12	***	0.6333642	0.03814196
Asp	C00049	PER	778.828302	64.6705801	0.08303573	720.587496	848.424504	767.472904	1.01E-12	***	1.20541417	0.10009245
Asp	C00049	HK2-ASO1-DPI	1335.59937	110.107905	0.08244082	1461.53067	1287.79059	1257.47684	1.01E-12	***	2.0671442	0.17041706
Asp	C00049	HK2-ASO1-DPI-PER	1066.57646	67.3261808	0.06312363	1110.47691	989.062061	1100.19042	1.01E-12	***	1.65076999	0.1042026
Asp	C00049	HK2-ASO1-MET	790.168313	204.970604	0.25940119	1024.90995	698.974243	646.620749	1.01E-12	***	1.22296543	0.31723869
Asp	C00049	HK2-ASO1-MET-PER	776.987585	52.1011722	0.06705535	806.395469	807.735975	716.831312	1.01E-12	***	1.20256525	0.08063843
ATP	C00002	Ctrl	413.831892	25.5048022	0.06163083	405.341922	442.4989	393.654853	9.45E-16	***	1	0.06163083
ATP	C00002	HK2-ASO1	365.546317	44.4101243	0.12148973	414.562155	327.986775	354.090021	9.45E-16	***	0.8833208	0.10731441
ATP	C00002	DPI	398.680505	20.03225	0.05024637	381.152446	420.516122	394.372947	9.45E-16	***	0.96338758	0.04840673
ATP	C00002	MET	281.9									

C	D07769	PER	4.27106095	1.42762602	0.33425559	5.91948288	3.43481213	3.45888785	1.48E-09	***	1.02495056	0.34259546
C	D07769	HK2-ASO1-DPI	41.5026878	7.05769507	0.17005393	33.6819157	43.4287093	47.3974384	1.48E-09	***	9.95963884	1.69367485
C	D07769	HK2-ASO1-DPI-PER	71.8842933	14.8055595	0.20596376	70.4269844	57.8612774	87.3646182	1.48E-09	***	17.25047389	3.55297354
C	D07769	HK2-ASO1-MET	115.576357	28.3668328	0.24534802	106.362213	92.9620802	147.404779	1.48E-09	***	27.7355096	6.80734869
C	D07769	HK2-ASO1-MET-PER	119.813752	9.60039456	0.08012765	120.572817	129.012081	109.856357	1.48E-09	***	28.752381	2.30386078
Carnitine	C00318	Ctrl	102.601026	5.06199173	0.04933666	108.030743	101.760303	98.012031	1.85E-14	***	1	0.04933666
Carnitine	C00318	HK2-ASO1	83.9812344	10.2729658	0.12232454	79.5387179	76.6771653	95.72782	1.85E-14	***	0.81852237	0.10012537
Carnitine	C00318	DPI	89.6574411	5.38923328	0.06010916	90.0374425	84.0882643	94.8466164	1.85E-14	***	0.87384547	0.05252612
Carnitine	C00318	MET	37.4174021	4.29434286	0.1147686	38.1146571	41.3204515	32.8170976	1.85E-14	***	0.36468838	0.04185478
Carnitine	C00318	PER	117.838162	13.2072203	0.11207931	103.402815	129.315675	120.795995	1.85E-14	***	1.14850861	0.12872406
Carnitine	C00318	HK2-ASO1-DPI	24.1291508	1.2781457	0.05297102	24.5445921	22.6949666	25.1478937	1.85E-14	***	0.23517456	0.01245744
Carnitine	C00318	HK2-ASO1-DPI-PER	17.1798228	3.71814476	0.21642509	14.0473267	16.2033947	21.2887469	1.85E-14	***	0.16744299	0.03623887
Carnitine	C00318	HK2-ASO1-MET	7.55201059	4.6059427	0.60989622	5.60368184	12.8119327	4.24041721	1.85E-14	***	0.07360561	0.04489178
Carnitine	C00318	HK2-ASO1-MET-PER	5.89781997	1.2324416	0.20896562	6.99841504	4.56622212	6.12882276	1.85E-14	***	0.05748305	0.01201198
CDP	C00112	Ctrl	32.1040698	3.74992687	0.11680534	28.8071178	31.3215927	36.1834987	9.07E-13	***	1	0.11680534
CDP	C00112	HK2-ASO1	41.0196539	3.70960775	0.09043489	44.2522676	36.9694518	41.8372422	9.07E-13	***	1.27770884	0.11554945
CDP	C00112	DPI	39.3264214	4.15770368	0.10572291	38.3436906	35.7481209	43.8874526	9.07E-13	***	1.22496686	0.12950760
CDP	C00112	MET	41.3629581	3.85409614	0.09317748	44.9636562	41.8276228	37.2975954	9.07E-13	***	1.28840233	0.12005008
CDP	C00112	PER	32.2995332	1.14241799	0.03536949	31.127734	32.3607578	33.4101078	9.07E-13	***	1.00608843	0.03558483
CDP	C00112	HK2-ASO1-DPI	25.1956053	0.2524437	0.01687712	25.5650516	24.7307664	25.2909979	9.07E-13	***	0.78481032	0.01324581
CDP	C00112	HK2-ASO1-DPI-PER	11.703473	1.42551758	0.12180295	12.6639264	10.0655558	12.3809367	9.07E-13	***	0.36454795	0.04403602
CDP	C00112	HK2-ASO1-MET	8.45474002	0.33794415	0.03997097	8.77470673	8.48820492	8.10130842	9.07E-13	***	0.26335415	0.01052532
CDP	C00112	HK2-ASO1-MET-PER	5.61614275	0.82676828	0.14721283	6.56061808	5.26440634	5.02340384	9.07E-13	***	0.17493554	0.02575276
CDP-choline	C00307	Ctrl	0.1149305	0.00074304	0.00646514	NA	0.11440509	0.11545591	1.17E-11	***	1	0.00646514
CDP-choline	C00307	HK2-ASO1	2.31765768	1.23751947	0.53395265	NA	1.44259928	3.19271609	1.17E-11	***	20.1657317	10.7675459
CDP-choline	C00307	DPI	1.20709627	0.56672794	0.46949688	0.81035925	1.85616463	0.95476493	1.17E-11	***	10.5028364	4.93104896
CDP-choline	C00307	MET	2.92342102	0.78041203	0.26695164	3.61460853	3.07856454	2.07709	1.17E-11	***	25.4364242	6.79029514
CDP-choline	C00307	PER	0.96885601	0.33821277	0.34908466	1.05469343	1.25587946	0.59599514	1.17E-11	***	8.4299293	2.94275899
CDP-choline	C00307	HK2-ASO1-DPI	35.7965001	2.19031132	0.06118786	38.0698057	35.6198083	33.6998864	1.17E-11	***	311.462139	19.0577024
CDP-choline	C00307	HK2-ASO1-DPI-PER	43.5983266	6.36264597	0.14593785	50.5180678	41.9661376	38.2107743	1.17E-11	***	379.345131	55.3608122
CDP-choline	C00307	HK2-ASO1-MET	98.2758208	14.6745397	0.14931994	113.817546	96.3515985	84.658318	1.17E-11	***	855.089106	127.681855
CDP-choline	C00307	HK2-ASO1-MET-PER	33.5312012	5.331041	0.15898747	38.9197804	33.4141988	28.2596245	1.17E-11	***	291.751976	46.3849098
CDP-ETA	C00570	Ctrl	5.24293408	0.46375334	0.08845302	5.10566854	4.70743784	5.51069584	4.45E-08	***	1	0.08845302
CDP-ETA	C00570	HK2-ASO1	7.84362899	6.56247415	0.836663	0.50084252	9.89370112	13.1363433	4.45E-08	***	1.49603807	1.2516797
CDP-ETA	C00570	DPI	8.74977558	0.57978207	0.06626251	9.39458151	8.27143599	8.58330925	4.45E-08	***	1.66887004	0.11058351
CDP-ETA	C00570	MET	11.0046949	1.32064799	0.12000769	10.9785266	12.3382325	9.69732547	4.45E-08	***	2.09895733	0.25189102
CDP-ETA	C00570	PER	8.44852838	0.81882286	0.09691899	8.26378793	9.34393914	7.73785807	4.45E-08	***	1.61141229	0.15617646
CDP-ETA	C00570	HK2-ASO1-DPI	26.2899023	0.93165105	0.0354376	27.0120775	25.2382925	26.6193369	4.45E-08	***	5.01434921	0.1776965
CDP-ETA	C00570	HK2-ASO1-DPI-PER	18.54616	1.82083837	0.09817873	20.4696376	18.3196952	16.8491472	4.45E-08	***	3.53736281	0.34729377
CDP-ETA	C00570	HK2-ASO1-MET	24.479661	3.91092465	0.15972221	27.6350577	25.6998074	20.1041179	4.45E-08	***	4.66907663	0.74594198
CDP-ETA	C00570	HK2-ASO1-MET-PER	11.0941317	0.89625036	0.08078599	12.0164793	11.0394316	10.2264842	4.45E-08	***	2.11601586	0.17094443
Choline	C00114	Ctrl	899.220894	61.7743302	0.06869761	859.11718	970.359314	868.186187	3.41E-06	***	1	0.06869761
Choline	C00114	HK2-ASO1	1537.78885	82.818411	0.05385552	NA	1479.22739	1596.35031	3.41E-06	***	1.71013469	0.09210019
Choline	C00114	DPI	2350.48069	552.3231	0.23498304	1745.34554	2478.63668	2827.45984	3.41E-06	***	2.613908	0.61422405
Choline	C00114	MET	3595.23078	530.099094	0.14744505	3926.98539	2983.86587	3874.84108	3.41E-06	***	3.99816197	0.58950932
Choline	C00114	PER	956.216595	51.9852852	0.0543656	898.023526	972.559897	998.066362	3.41E-06	***	1.06338343	0.05781147
Choline	C00114	HK2-ASO1-DPI	3370.72585	117.958516	0.03499499	3495.6026	3261.18588	3355.38907	3.41E-06	***	3.74849592	0.13117858
Choline	C00114	HK2-ASO1-DPI-PER	2615.90616	415.296928	0.15875834	2736.4522	2153.67167	2957.59462	3.41E-06	***	2.90908072	0.46184083
Choline	C00114	HK2-ASO1-MET	2288.27288	686.585655	0.30004536	2626.68413	1498.17416	2739.96034	3.41E-06	***	2.54472833	0.76353392
Choline	C00114	HK2-ASO1-MET-PER	2876.42222	614.602555	0.2136691	2512.74362	3586.03014	2530.49291	3.41E-06	***	3.19879381	0.6834834
Cit	C00158	Ctrl	2897.79302	280.726275	0.09687589	2984.44535	3124.97705	2583.95664	2.27E-11	***	1	0.09687589
Cit	C00158	HK2-ASO1	2139.43616	394.602117	0.18444211	2568.01308	1791.16188	2059.13353	2.27E-11	***	0.73829847	0.13617333
Cit	C00158	DPI	2373.1099	178.590289	0.0752558	2202.12784	2558.44251	2358.75934	2.27E-11	***	0.81893699	0.0612976
Cit	C00158	MET	1744.05852	53.6631357	0.03076911	1753.46591	1792.39592	1686.31373	2.27E-11	***	0.60185752	0.01851862
Cit	C00158	PER	2603.52649	155.131356	0.05958509	2747.19472	2624.34935	2439.03539	2.27E-11	***	0.8984515	0.05353431
Cit	C00158	HK2-ASO1-DPI	1151.01409	124.798906	0.10842518	1278.41156	1145.64357	1028.98714	2.27E-11	***	0.39720369	0.04306688
Cit	C00158	HK2-ASO1-DPI-PER	253.494974	77.2329788	0.30467262	228.914829	340.026513	191.543579	2.27E-11	***	0.08747863	0.02665234
Cit	C00158	HK2-ASO1-MET	162.312155	26.1784473	0.16128458	188.887571	136.549611	161.499283	2.27E-11	***	0.05601234	0.00903393
Cit	C00158	HK2-ASO1-MET-PER	349.577245	453.896512	1.29841549	873.689914	86.305878	88.7359445	2.27E-11	***	0.12063568	0.15663524
Citrulline	C00327	Ctrl	1.35136178	0.06871621	0.0508496	1.42878085	1.3277066	1.2975979	0.11843772		1	0.0508496
Citrulline	C00327	HK2-ASO1	1.9173179	0.6602332	0.34435249	1.1893723	2.47745206	2.08512934	0.11843772		1.4188043	0.4885688
Citrulline	C00327	DPI	3.24183083	0.87129642	0.26876678	4.0297407	2.30606783	3.38968397	0.11843772		2.3989363	0.64475438
Citrulline	C00327	MET	3.10061672	0.940667	0.30338061	3.18792041	2.11934131	3.99458845	0.11843772		2.29443867	0.69608821
Citrulline	C00327	PER	2.4562371	0.72107184	0.2935769	NA	2.96611188	1.94636231	0.11843772		1.81760142	0.53358904
Citrulline	C00327	HK2-ASO1-DPI	2.85438332	1.40655335	0.49276961	3.66683452	1.23023547	3.66607998	0.11843772		2.11222736	1.04084145
Citrulline	C00327	HK2-ASO1-DPI-PER	2.55423051	0.79620073	0.31171843	2.39129325	3.4192961	1.85210218	0.11843772		1.89011599	0.589184
Citrulline	C00327	HK2-ASO1-MET	1.26960665	1.11638469	0.87931501	0.26673529	1.06961411	2.47247056	0.11843772		0.93950167	0.8261183
Citrulline	C00327	HK2-ASO1-MET-PER	1.9562681	0.76367435	0.39037345	2.74709858	1.89869731	1.22300841	0.11843772		1.44762722	0.56511466
CMP	C00055	Ctrl	2.04842487	0.1305056	0.06371022	1.92684297	2.0321114	2.18632025	1.55E-08	***	1	0.06371022
CMP	C00055	HK2-ASO1	4.44117318	0.5467771	0.12311546	3.84597256	4.55638006	4.92116691	1.55E-08	***	2.16809181	0.26692563
CMP	C00055	DPI	6.22998852	0.37093663	0.0595403	5.965150384	6.07521361	6.6532481	1.55E-08	***	3.04135563	0.18108384
CMP	C00055	MET	8.44599818	0.6855186	0.0811649	8.73865934	8.93661173	7.66272346	1.55E-08	***	4.12316717	0.33465645
CMP	C00055	PER	2.87256395	0.1989537	0.28542284	3.81741542	2.45181198	2.34846444	1.55E-08	***	1.40232819	0.4002565
CMP												

CoA	C00010	HK2-ASO1-DPI-PER	0.7337372	0.12931138	0.17623665	0.87932849	0.68964377	0.63223935	3.66E-05	***	0.39375835	0.06939465
CoA	C00010	HK2-ASO1-MET	0.65004322	0.40897174	0.62914545	0.32574861	1.1094827	0.51489835	3.66E-05	***	0.34884417	0.21947372
CoA	C00010	HK2-ASO1-MET-PER	0.53500801	0.24221636	0.45273408	0.81016787	0.35402241	0.44083375	3.66E-05	***	0.28711079	0.12998484
Creatine	C00300	Ctrl	870.649823	46.7328509	0.05367583	849.288083	924.245917	838.41547	1.09E-14	***	1	0.05367583
Creatine	C00300	HK2-ASO1	718.224295	10.388543	0.0144642	727.251574	706.869383	720.551927	1.09E-14	***	0.82492901	0.01193194
Creatine	C00300	DPI	1172.13154	108.241361	0.09234575	1053.4503	1265.41718	1197.52715	1.09E-14	***	1.34627207	0.1243225
Creatine	C00300	MET	495.667595	33.6715806	0.06793178	524.889627	458.845546	503.267611	1.09E-14	***	0.56930764	0.03867408
Creatine	C00300	PER	1052.67312	80.4070796	0.07638371	992.932116	1144.09488	1020.99237	1.09E-14	***	1.20906603	0.09235295
Creatine	C00300	HK2-ASO1-DPI	611.481133	34.3631764	0.05619663	650.292016	599.225123	584.926259	1.09E-14	***	0.70232729	0.03946842
Creatine	C00300	HK2-ASO1-DPI-PER	342.918685	38.4988953	0.11226829	341.717729	305.034319	382.004007	1.09E-14	***	0.39386522	0.04421858
Creatine	C00300	HK2-ASO1-MET	127.588492	53.3870072	0.41843121	188.544765	105.074156	89.1465551	1.09E-14	***	0.14654398	0.06131858
Creatine	C00300	HK2-ASO1-MET-PER	118.913801	7.09053903	0.05962755	116.01807	126.993921	113.729412	1.09E-14	***	0.13658051	0.00814396
Creatine/P-Creatine	NA	Ctrl	135.389438	10.581419	0.07815542	138.907115	143.764004	123.497195	3.09E-10	***	1	0.07815542
Creatine/P-Creatine	NA	HK2-ASO1	167.413396	15.570194	0.09300447	NA	156.403606	178.423186	3.09E-10	***	1.23653217	0.11500302
Creatine/P-Creatine	NA	DPI	181.683216	13.9711941	0.07689865	188.175834	165.647118	191.226695	3.09E-10	***	1.3419305	0.10319264
Creatine/P-Creatine	NA	MET	103.281427	9.29791808	0.09002507	112.380408	103.667287	93.7965858	3.09E-10	***	0.762847	0.06867536
Creatine/P-Creatine	NA	PER	135.26196	3.49407912	0.02583194	132.561126	139.208087	134.016666	3.09E-10	***	0.99905843	0.02580762
Creatine/P-Creatine	NA	HK2-ASO1-DPI	357.131401	79.5628253	0.22278306	362.775387	433.721953	274.896864	3.09E-10	***	2.63780843	0.58765903
Creatine/P-Creatine	NA	HK2-ASO1-DPI-PER	0	0	NA	0	0	0	3.09E-10	***	0	0
Creatine/P-Creatine	NA	HK2-ASO1-MET	0	0	NA	0	0	0	3.09E-10	***	0	0
Creatine/P-Creatine	NA	HK2-ASO1-MET-PER	0	0	NA	0	0	0	3.09E-10	***	0	0
Creatinine	C00791	Ctrl	50.303982	2.65496988	0.05277852	48.2405773	53.2992617	49.3721071	0.0165415	*	1	0.05277852
Creatinine	C00791	HK2-ASO1	66.8803576	37.2745173	0.55733131	109.921141	45.2711564	45.4487758	0.0165415	*	1.32952412	0.74098542
Creatinine	C00791	DPI	47.1124251	18.5597896	0.39394661	26.0628777	54.1510538	61.1233437	0.0165415	*	0.93655459	0.36895269
Creatinine	C00791	MET	45.78275	7.22850387	0.15788706	53.2282677	38.7928107	45.3271714	0.0165415	*	0.91012179	0.14369645
Creatinine	C00791	PER	37.0111573	7.11900012	0.19234741	29.5218797	37.8209702	43.690622	0.0165415	*	0.73575005	0.14151961
Creatinine	C00791	HK2-ASO1-DPI	24.0534278	5.69191541	0.23663635	30.4337432	22.2214754	19.5030648	0.0165415	*	0.47816151	0.11315039
Creatinine	C00791	HK2-ASO1-DPI-PER	24.4554566	9.75391325	0.39884405	35.637839	17.7004067	20.0281241	0.0165415	*	0.48615349	0.19389943
Creatinine	C00791	HK2-ASO1-MET	23.1220835	9.61533065	0.41585053	31.8319608	12.8040826	24.7302069	0.0165415	*	0.45964718	0.19114452
Creatinine	C00791	HK2-ASO1-MET-PER	20.6892801	1.37848006	0.06662774	19.4353538	22.1653363	20.4671503	0.0165415	*	0.41128514	0.0274703
CTP	C00063	Ctrl	30.0301379	0.35910251	0.01195807	29.823259	30.4447933	29.8222944	1.98E-17	***	1	0.01195807
CTP	C00063	HK2-ASO1	28.7742773	2.53565025	0.08812212	31.415868	26.3598544	28.5471094	1.98E-17	***	0.95817999	0.08443685
CTP	C00063	DPI	23.7364252	1.46282175	0.06162772	24.7597164	24.3886111	22.0609481	1.98E-17	***	0.79042012	0.04871179
CTP	C00063	MET	17.4548472	1.28113583	0.07339714	18.9259562	16.5844302	16.8541554	1.98E-17	***	0.58124433	0.04266167
CTP	C00063	PER	31.2567101	1.63571009	0.05233149	32.2936546	32.1053906	29.3710849	1.98E-17	***	1.04084471	0.0546895
CTP	C00063	HK2-ASO1-DPI	15.4280283	0.87420779	0.05666361	16.354748	14.6180675	15.3112692	1.98E-17	***	0.5137515	0.02911101
CTP	C00063	HK2-ASO1-DPI-PER	3.15176269	0.4154979	0.13183033	3.49313081	2.68912082	3.27303643	1.98E-17	***	0.10495332	0.01383603
CTP	C00063	HK2-ASO1-MET	1.60196875	0.5050294	0.31525546	1.65114842	2.0806092	1.07414864	1.98E-17	***	0.05334537	0.01681742
CTP	C00063	HK2-ASO1-MET-PER	0.73149003	0.57051183	0.77993111	1.38630096	0.34162875	0.46654037	1.98E-17	***	0.02435853	0.01899798
Cys	C00097	Ctrl	0.16386183	0.01934802	0.11807524	0.17754295	0.15018071	NA	0.00488136	**	1	0.11807524
Cys	C00097	HK2-ASO1	0.49286853	0.18426539	0.37386316	NA	0.36257323	0.62316384	0.00488136	**	3.00783005	1.12451685
Cys	C00097	DPI	0.50611531	0.43667098	0.8627895	0.16428354	0.35602525	0.99803715	0.00488136	**	3.08867121	2.66487308
Cys	C00097	MET	0.83291007	0.09483342	0.11385793	0.89996742	0.76585272	NA	0.00488136	**	5.08300242	0.57874014
Cys	C00097	PER	0.29550338	0.23844941	0.80692616	0.46411257	0.12689419	NA	0.00488136	**	1.80336923	1.4551858
Cys	C00097	HK2-ASO1-DPI	1.54595475	0.85980295	0.55616716	2.53488436	0.97542666	1.12755322	0.00488136	**	9.43450198	5.24716013
Cys	C00097	HK2-ASO1-DPI-PER	2.65672806	0.43794896	0.16484524	2.37056283	3.1608943	2.43872703	0.00488136	**	16.2132211	2.67267225
Cys	C00097	HK2-ASO1-MET	8.54434309	5.37188314	0.6287064	5.5569906	5.33016182	14.7458768	0.00488136	**	52.1435844	32.783005
Cys	C00097	HK2-ASO1-MET-PER	5.1348034	1.45279023	0.28293006	3.70350581	6.60817236	5.09273202	0.00488136	**	31.3361778	8.86594664
Cys Sulfinic Acid	C00606	Ctrl	0	0	NA	0	0	0	6.44E-07	***	NA	NA
Cys Sulfinic Acid	C00606	HK2-ASO1	0	0	NA	0	0	0	6.44E-07	***	NA	NA
Cys Sulfinic Acid	C00606	DPI	0.26957288	0.09201125	0.34132234	NA	0.33463465	0.2045111	6.44E-07	***	Inf	Inf
Cys Sulfinic Acid	C00606	MET	0	0	NA	0	0	0	6.44E-07	***	NA	NA
Cys Sulfinic Acid	C00606	PER	0.11277244	0.00598405	0.0530631	0.10854107	0.1170038	NA	6.44E-07	***	Inf	Inf
Cys Sulfinic Acid	C00606	HK2-ASO1-DPI	0.23193118	0.10056313	0.4335904	0.30304005	0.16082231	NA	6.44E-07	***	Inf	Inf
Cys Sulfinic Acid	C00606	HK2-ASO1-DPI-PER	0	0	NA	0	0	0	6.44E-07	***	NA	NA
Cys Sulfinic Acid	C00606	HK2-ASO1-MET	0	0	NA	0	0	0	6.44E-07	***	NA	NA
Cys Sulfinic Acid	C00606	HK2-ASO1-MET-PER	0	0	NA	0	0	0	6.44E-07	***	NA	NA
Cytosine	C00380	Ctrl	31.2644031	2.48908328	0.07961397	29.7872967	34.1381736	29.8677389	1.67E-11	***	1	0.07961397
Cytosine	C00380	HK2-ASO1	22.8472575	6.46441582	0.28294056	29.8938457	17.1913903	21.4565366	1.67E-11	***	0.73077543	0.20676601
Cytosine	C00380	DPI	25.6255973	3.15716868	0.12320371	21.9857562	27.2683683	27.6226673	1.67E-11	***	0.81964134	0.10098285
Cytosine	C00380	MET	14.5914794	2.63047364	0.18027464	17.2297888	14.5757371	11.9689122	1.67E-11	***	0.46671223	0.08413638
Cytosine	C00380	PER	40.7699934	4.05204374	0.09938789	40.3317741	45.0233355	36.9548706	1.67E-11	***	1.30403876	0.12960566
Cytosine	C00380	HK2-ASO1-DPI	2.77039573	0.90927551	0.32821142	3.71021192	2.70587772	1.89509756	1.67E-11	***	0.08861182	0.02908341
Cytosine	C00380	HK2-ASO1-DPI-PER	0.21222761	0.18595112	0.87618722	0.07517043	0.1376153	0.42389709	1.67E-11	***	0.00678815	0.00594761
Cytosine	C00380	HK2-ASO1-MET	0.79449411	0.78681896	0.99033957	1.35085913	NA	0.23812909	1.67E-11	***	0.0254121	0.02516669
Cytosine	C00380	HK2-ASO1-MET-PER	0.14165718	0.06150013	0.43414768	0.13397164	0.20663885	0.08436104	1.67E-11	***	0.00453094	0.0019671
dA	C00559	Ctrl	0.12707918	0.11753483	0.92489447	0.0439695	NA	0.21018885	9.17E-05	***	1	0.92489447
dA	C00559	HK2-ASO1	0.37751076	0.08016703	0.21235694	0.4527533	0.38658718	0.29319181	9.17E-05	***	2.97067363	0.63084315
dA	C00559	DPI	0.10403554	0.05633067	0.54145597	NA	0.14386734	0.06420375	9.17E-05	***	0.81866711	0.44327219
dA	C00559	MET	0.09101731	0.05411614	0.59456978	0.05569908	0.15331973	0.06403313	9.17E-05	***	0.71622523	0.42584588
dA	C00559	PER	0.22676058	0.04207576	0.18555147	0.27101376	0.18726703	0.22200094	9.17E-05	***	1.7844039	0.33109876
dA	C00559	HK2-ASO1-DPI	0.12900761	0.08415158	0.65229935	0.08654564	0.07454695	0.22593023	9.17E-05	***	1.01517502	0.662198
dA	C00559	HK2-ASO1-DPI-PER	0	0	NA	0	0	0	9.17E-05	***	0	0
dA	C00559	HK2-ASO1-MET	0	0	NA	0	0	0	9.17E-05	***	0	0
dA	C00559	HK2-ASO1-MET-PER	0.20646794	NA	NA	NA	NA	0.20646794	9.17E-05	***	1.62471892	NA
dATP	C00131	Ctrl	0.10818718	0.01128152	0.10427782	NA	0.11616442	0.10020994	4.23E-07	***	1	0.10427782
dATP	C00131	HK2-ASO1	0	0	NA	0	0	0	4.23E-07	***	0	0
dATP	C00131	DPI	0	0	NA	0	0	0	4.23E-07	***	0	0
dATP	C00131	MET	0	0	NA	0	0	0	4.23E-07	***	0	0
dATP	C00131	PER	0.15230878	0.07406689	0.4862943	0.20468198	0.09993558	NA	4.23E-07	***	1.4078265	0.6

dATP	C00131	HK2-ASO1-MET-PER	0	0	NA	0	0	0	4.23E-07	***	0	0
dC	C00881	Ctrl	61.6591089	7.02809014	0.113983	53.5616924	65.240981	66.1746532	7.32E-14	***	1	0.113983
dC	C00881	HK2-ASO1	29.5980669	5.36799223	0.18136293	26.8995841	26.1147124	35.7799043	7.32E-14	***	0.48002748	0.08705919
dC	C00881	DPI	1.9554222	2.78475864	1.42412142	5.1583117	0.10698749	6.60096723	7.32E-14	***	0.03171344	0.04516378
dC	C00881	MET	0.2865888	0.27689136	0.96616253	0.09079704	0.48238055	NA	7.32E-14	***	0.00464796	0.0049068
dC	C00881	PER	0.73849231	0.18334661	0.24827153	0.87628504	0.80879313	0.53039877	7.32E-14	***	0.01197702	0.00297355
dC	C00881	HK2-ASO1-DPI	0	0	NA	0	0	0	7.32E-14	***	0	0
dC	C00881	HK2-ASO1-DPI-PER	0	0	NA	0	0	0	7.32E-14	***	0	0
dC	C00881	HK2-ASO1-MET	0	0	NA	0	0	0	7.32E-14	***	0	0
dC	C00881	HK2-ASO1-MET-PER	0	0	NA	0	0	0	7.32E-14	***	0	0
dCDP	C00705	Ctrl	0.06514226	0.01755234	0.26944632	0.07755364	NA	0.05273088	0.00010927	***	1	0.26944632
dCDP	C00705	HK2-ASO1	0	0	NA	0	0	0	0.00010927	***	0	0
dCDP	C00705	DPI	0.18985515	0.1060588	0.5586301	0.2964083	0.18885945	0.08429771	0.00010927	***	2.91446993	1.62811062
dCDP	C00705	MET	0.10936606	0.04170036	0.38129159	0.06327658	0.12033852	0.14448308	0.00010927	***	1.67888038	0.64014297
dCDP	C00705	PER	0.074451	0.01573786	0.21138544	0.06088512	0.09170559	0.07076231	0.00010927	***	1.14289872	0.24159215
dCDP	C00705	HK2-ASO1-DPI	0	0	NA	0	0	0	0.00010927	***	0	0
dCDP	C00705	HK2-ASO1-DPI-PER	0	0	NA	0	0	0	0.00010927	***	0	0
dCDP	C00705	HK2-ASO1-MET	0	0	NA	0	0	0	0.00010927	***	0	0
dCDP	C00705	HK2-ASO1-MET-PER	0	0	NA	0	0	0	0.00010927	***	0	0
dG	C00330	Ctrl	9.63152109	7.37018926	0.7652155	6.70477213	4.17425288	18.0155382	0.07916051		1	0.7652155
dG	C00330	HK2-ASO1	3.72690353	1.82690308	0.49019328	2.06579086	3.43135889	5.68356083	0.07916051		0.38694859	0.1896796
dG	C00330	DPI	4.4318599	1.8802753	0.42426325	6.5794104	3.08157913	3.63459015	0.07916051		0.46014122	0.19522101
dG	C00330	MET	5.67396229	1.21150817	0.21352066	6.35691635	6.38980847	4.27516205	0.07916051		0.58910345	0.12578576
dG	C00330	PER	11.8231236	12.014377	0.101617621	5.71958893	4.08575744	25.6640245	0.07916051		1.2275448	0.24740183
dG	C00330	HK2-ASO1-DPI	12.2639009	4.85710866	0.39604924	7.24139274	16.9367085	12.6136014	0.07916051		1.27330883	0.504083
dG	C00330	HK2-ASO1-DPI-PER	1.3606531	0.43272038	0.31802403	1.56907779	1.6497171	0.86316439	0.07916051		0.14127084	0.04492752
dG	C00330	HK2-ASO1-MET	1.18741801	0.968483	0.81562094	NA	0.50259712	1.8722389	0.07916051		0.12328458	0.10055348
dG	C00330	HK2-ASO1-MET-PER	0.45946651	0.29737649	0.64722126	0.80275039	0.29488944	0.2807597	0.07916051		0.04770446	0.03087534
DMG	C01026	Ctrl	8.74516233	4.24803186	0.48575792	13.1776942	8.3483113	4.70948148	0.43196269		1	0.48575792
DMG	C01026	HK2-ASO1	14.7390108	6.31014495	0.4281254	22.0238767	10.9701833	11.2229723	0.43196269		1.68539019	0.72155836
DMG	C01026	DPI	10.3481794	4.22883041	0.40865453	5.56209768	13.5797147	11.9027257	0.43196269		1.18330329	0.48356225
DMG	C01026	MET	7.98060928	3.72330661	0.46654416	6.93158843	4.89434712	12.1158923	0.43196269		0.91257417	0.42575615
DMG	C01026	PER	7.34878996	2.22592371	0.30289663	4.79753868	8.35409346	8.89473773	0.43196269		0.84032631	0.25453201
DMG	C01026	HK2-ASO1-DPI	20.0837018	8.5868486	0.42755308	29.9987338	15.0707517	15.1816197	0.43196269		2.29654991	0.98189699
DMG	C01026	HK2-ASO1-DPI-PER	17.3979697	16.1559179	0.92860938	7.65320447	36.046903	8.49380182	0.43196269		1.98943931	1.84741201
DMG	C01026	HK2-ASO1-MET	11.031185	6.34715414	0.5753828	18.2725248	6.43142663	8.38960357	0.43196269		1.26140426	0.72579032
DMG	C01026	HK2-ASO1-MET-PER	12.8953223	6.44996778	0.36059337	8.07778012	13.2508847	17.3573021	0.43196269		1.47456637	0.53171886
dTMP	C00364	Ctrl	0.06620691	0.01513795	0.22864611	0.0543344	0.06103281	0.08325354	0.00204374	**	1	0.22864611
dTMP	C00364	HK2-ASO1	0.23403962	0.11661317	0.49826251	NA	0.31649758	0.15158166	0.00204374	**	3.53497244	1.76134425
dTMP	C00364	DPI	0	0	NA	0	0	0	0.00204374	**	0	0
dTMP	C00364	MET	0.13344325	0.00916678	0.06869424	0.13992514	NA	0.12696135	0.00204374	**	2.01554853	0.13845657
dTMP	C00364	PER	0.15541162	0.04505005	0.28987572	0.16564232	0.19446647	0.10612606	0.00204374	**	2.34736234	0.68044335
dTMP	C00364	HK2-ASO1-DPI	0.50724539	0.13892247	0.27387625	0.40901237	0.6054784	NA	0.00204374	**	7.66151629	2.0983075
dTMP	C00364	HK2-ASO1-DPI-PER	0	0	NA	0	0	0	0.00204374	**	0	0
dTMP	C00364	HK2-ASO1-MET	0.30847431	0.25150764	0.81532765	0.56520849	0.06254123	0.29767321	0.00204374	**	4.65924615	3.79881223
dTMP	C00364	HK2-ASO1-MET-PER	0.27681798	0.08545333	0.30869861	0.25613071	0.37071579	0.20360745	0.00204374	**	4.18110386	1.29070096
dTTP	C00459	Ctrl	0.24940427	0.13116489	0.52591278	0.13364509	0.3918657	0.22270202	2.48E-05	***	1	0.52591278
dTTP	C00459	HK2-ASO1	0	0	NA	0	0	0	2.48E-05	***	0	0
dTTP	C00459	DPI	0	0	NA	0	0	0	2.48E-05	***	0	0
dTTP	C00459	MET	0	0	NA	0	0	0	2.48E-05	***	0	0
dTTP	C00459	PER	0.16558593	0.07669128	0.46315092	0.21260724	0.07708836	0.20706219	2.48E-05	***	0.66392528	0.30749785
dTTP	C00459	HK2-ASO1-DPI	0	0	NA	0	0	0	2.48E-05	***	0	0
dTTP	C00459	HK2-ASO1-DPI-PER	0	0	NA	0	0	0	2.48E-05	***	0	0
dTTP	C00459	HK2-ASO1-MET	0	0	NA	0	0	0	2.48E-05	***	0	0
dTTP	C00459	HK2-ASO1-MET-PER	0	0	NA	0	0	0	2.48E-05	***	0	0
F16BP	C00354	Ctrl	3.78138412	0.4807543	0.12713712	3.44595673	3.56602988	4.33216576	0.00953012	**	1	0.12713712
F16BP	C00354	HK2-ASO1	4.11557242	0.42787322	0.10396445	4.4408646	3.63087937	4.27497328	0.00953012	**	1.08837724	0.11315254
F16BP	C00354	DPI	4.75543737	0.4677337	0.09835766	4.37659234	4.61149501	5.27822476	0.00953012	**	1.25759172	0.12369378
F16BP	C00354	MET	4.24887104	0.69429672	0.16340734	5.04625878	3.92213218	3.77822217	0.00953012	**	1.12362852	0.18360915
F16BP	C00354	PER	4.60291305	0.12459909	0.02706962	4.4623766	4.69986575	4.6464968	0.00953012	**	1.21725614	0.32295066
F16BP	C00354	HK2-ASO1-DPI	4.63610096	1.07628664	0.23215341	5.85672042	3.8234079	4.22817455	0.00953012	**	1.2260328	0.28462769
F16BP	C00354	HK2-ASO1-DPI-PER	3.58805088	0.38003878	0.10591789	4.01649172	3.29162151	3.4560394	0.00953012	**	0.94887236	0.10050256
F16BP	C00354	HK2-ASO1-MET	3.32972328	0.66559619	0.19989535	4.06201043	2.76150314	3.16565626	0.00953012	**	0.88055674	0.1760192
F16BP	C00354	HK2-ASO1-MET-PER	2.81519082	0.51317942	0.18228939	3.30816823	2.85345301	2.28395122	0.00953012	**	0.74448687	0.13571206
Folate	C00504	Ctrl	1.64694447	0.67264645	0.40842085	0.95655591	1.68395704	2.30032048	0.0125283	*	1	0.40842085
Folate	C00504	HK2-ASO1	1.68380614	0.41025183	0.24364553	1.85361947	1.9818866	1.21591234	0.0125283	*	1.02238185	0.24909876
Folate	C00504	DPI	1.55513968	0.56803404	0.36526229	1.04535399	1.45260899	2.16745607	0.0125283	*	0.94425751	0.34490176
Folate	C00504	MET	1.69084579	0.2352982	0.13916006	1.43437066	1.89674044	1.74142628	0.0125283	*	1.02665622	0.14286954
Folate	C00504	PER	1.29814153	0.38956798	0.30009669	1.54465009	0.8490217	1.50075282	0.0125283	*	0.78821208	0.23653984
Folate	C00504	HK2-ASO1-DPI	1.9619634	0.54532085	0.2779465	1.56028463	1.7428439	2.58276166	0.0125283	*	1.19127477	0.33111065
Folate	C00504	HK2-ASO1-DPI-PER	2.15586803	0.86259776	0.40011622	3.11133093	1.43443005	1.9218431	0.0125283	*	1.30901075	0.52375643
Folate	C00504	HK2-ASO1-MET	4.08825585	1.79431399	0.43889474	3.32845	2.79885234	6.13746521	0.0125283	*	2.48232768	1.08948056
Folate	C00504	HK2-ASO1-MET-PER	2.65264187	0.31968213	0.12051462	2.53697677	2.40689108	3.01405777	0.0125283	*	1.61064439	0.1941062
Fru	C00095	Ctrl	0.77859218	0.27423459	0.35221853	0.95346372	0.91978178	0.46253102	0.02879284	*	1	0.35221853
Fru	C00095	HK2-ASO1	1.5398928	0.53730095	0.34892101	2.15574898	1.29702768	1.16690175	0.02879284	*	1.97779127	0.69009292
Fru	C00095	DPI	1.26761131	0.38000968	0.29978407	0.96262273	1.69331582	1.14689537	0.02879284	*	1.62808123	0.48807282
Fru	C00095	MET	0.37572248	0.03346487	0.08906804	0.39938572	NA	0.35205925	0.02879284	*	0.48256648	0.04298125
Fru	C00095	PER	0.9120499	0.37549628	0.41170585	0.87442669	0.55678152	1.30494147	0.02879284	*	1.17140902	0.48227595
Fru	C00095	HK2-ASO1-DPI	0	0	NA	0	0	0	0.02879284	*	0	0
Fru	C00095	HK2-ASO1-DPI-PER	1.58952862	0.56987529	0.35851842	NA	1.18656594	1.99249131	0.02879284	*	2.041542	0.73193041
Fru	C00095	HK2-ASO1-MET	2.04392066	1.66256849	0.81342124	NA	0.86830721	3.21953411	0.02879284	*	2.62514924	2.13535216
Fru	C00095	HK2-ASO1-MET-PER	0.8513796	0.12099772	0.14211959	0.76582129	0.93693791	NA	0.02879284	*	1.09348595	0.15540577

Fum	C00122	HK2-ASO1	80.059791	4.46112702	0.05572244	85.0493888	76.4561234	78.6738609	1.15E-15	***	0.63435992	0.03534808
Fum	C00122	DPI	210.638663	3.90126102	0.01852111	214.168211	211.298051	206.449728	1.15E-15	***	1.66901168	0.03091194
Fum	C00122	MET	210.236491	8.22357526	0.03911583	217.914186	211.236748	201.558538	1.15E-15	***	1.66582504	0.06516013
Fum	C00122	PER	146.727195	16.2334826	0.11063718	158.58354	153.372658	128.225389	1.15E-15	***	1.16260424	0.12862725
Fum	C00122	HK2-ASO1-DPI	85.0762893	2.97963329	0.03502308	88.2523183	84.634069	82.3424806	1.15E-15	***	0.674110854	0.02360935
Fum	C00122	HK2-ASO1-DPI-PER	78.1633851	5.89598448	0.07543154	83.168748	71.6641564	79.657251	1.15E-15	***	0.61933361	0.04671729
Fum	C00122	HK2-ASO1-MET	69.2610456	6.05544299	0.08742927	74.7309652	62.7540341	70.2981377	1.15E-15	***	0.54879523	0.04798077
Fum	C00122	HK2-ASO1-MET-PER	81.2630696	4.76659391	0.05865634	80.9873311	86.1615475	76.6403304	1.15E-15	***	0.6438942	0.03776847
G	C00387	Ctrl	0	0	0	0	0	0	0.0001822	***	NA	NA
G	C00387	HK2-ASO1	0	0	0	0	0	0	0.0001822	***	NA	NA
G	C00387	DPI	0	0	0	0	0	0	0.0001822	***	NA	NA
G	C00387	MET	0	0	0	0	0	0	0.0001822	***	NA	NA
G	C00387	PER	0	0	0	0	0	0	0.0001822	***	NA	NA
G	C00387	HK2-ASO1-DPI	0	0	0	0	0	0	0.0001822	***	NA	NA
G	C00387	HK2-ASO1-DPI-PER	1.00965824	0.59116656	0.58551155	0.56164785	0.78763326	1.6796936	0.0001822	***	Inf	Inf
G	C00387	HK2-ASO1-MET	0.53850495	0.35678914	0.662555	0.20706605	0.49230533	0.91614345	0.0001822	***	Inf	Inf
G	C00387	HK2-ASO1-MET-PER	1.07659574	0.52564049	0.48824315	0.49172707	1.2285153	1.50954486	0.0001822	***	Inf	Inf
G3P	C00118	Ctrl	5.37229135	0.80571968	0.14997691	6.11307337	5.48935875	4.51444194	8.16E-13	***	1	0.14997691
G3P	C00118	HK2-ASO1	1.2677104	0.24772161	0.19540868	1.53742852	1.05035833	1.21534434	8.16E-13	***	0.23597201	0.04611098
G3P	C00118	DPI	3.22245936	0.548435	0.17019144	2.7259618	3.13026933	3.81114694	8.16E-13	***	0.5998296	0.10208586
G3P	C00118	MET	2.61606845	0.21237729	0.08118185	2.77257527	2.37431176	2.70131832	8.16E-13	***	0.4869558	0.03953198
G3P	C00118	PER	1.45028555	0.18666137	0.12870664	1.25049278	1.48014905	1.62021482	8.16E-13	***	0.26995661	0.03474521
G3P	C00118	HK2-ASO1-DPI	0	0	0	0	0	0	8.16E-13	***	0	0
G3P	C00118	HK2-ASO1-DPI-PER	0	0	0	0	0	0	8.16E-13	***	0	0
G3P	C00118	HK2-ASO1-MET	0	0	0	0	0	0	8.16E-13	***	0	0
G3P	C00118	HK2-ASO1-MET-PER	0	0	0	0	0	0	8.16E-13	***	0	0
G6P-F6P	C00085	Ctrl	19.1807523	1.34386516	0.07006321	17.7488121	20.4145391	19.3789056	1.63E-13	***	1	0.07006321
G6P-F6P	C00085	HK2-ASO1	38.526889	3.52943184	0.09160957	35.2251961	38.108676	42.2467949	1.63E-13	***	2.00862242	0.18400904
G6P-F6P	C00085	DPI	21.1147255	0.89545354	0.04240896	20.1033175	21.8065141	21.4343449	1.63E-13	***	1.10082885	0.04668501
G6P-F6P	C00085	MET	14.3365736	0.79823871	0.05567849	15.0320239	14.5127251	13.4649718	1.63E-13	***	0.74744585	0.04161665
G6P-F6P	C00085	PER	20.1905966	1.88673179	0.09344606	18.0150395	18.023268	21.1785236	1.63E-13	***	1.05264884	0.09836589
G6P-F6P	C00085	HK2-ASO1-DPI	21.4237488	1.60800509	0.07505713	22.9392762	19.7369733	21.5949968	1.63E-13	***	1.11693996	0.08383431
G6P-F6P	C00085	HK2-ASO1-DPI-PER	9.49114456	0.50303048	0.05299998	10.0658582	9.13086425	9.27671123	1.63E-13	***	0.4948265	0.0262258
G6P-F6P	C00085	HK2-ASO1-MET	8.89055521	0.30464962	0.03426666	9.17034434	8.93532231	8.565999	1.63E-13	***	0.46351442	0.01588309
G6P-F6P	C00085	HK2-ASO1-MET-PER	7.79868933	0.99410595	0.1274709	8.09400395	8.61167691	6.69038714	1.63E-13	***	0.40658934	0.05182831
GABA	C00334	Ctrl	5.94243164	2.15885622	0.36329509	4.98682837	4.42629823	8.41416832	1.83E-06	***	1	0.36329509
GABA	C00334	HK2-ASO1	4.38571886	1.35661478	0.30932552	5.92943147	3.38339086	3.84433425	1.83E-06	***	0.73803438	0.22829287
GABA	C00334	DPI	8.80456021	0.64622381	0.07339649	8.86233066	9.41995918	8.13139077	1.83E-06	***	1.48164266	0.10874737
GABA	C00334	MET	5.57214492	0.97668739	0.17528033	5.49521005	6.5850245	4.63620021	1.83E-06	***	0.93768768	0.1643582
GABA	C00334	PER	6.72849036	1.02407997	0.15220056	5.72289412	6.69247316	7.77010379	1.83E-06	***	1.13227897	0.17233349
GABA	C00334	HK2-ASO1-DPI	4.65461918	0.46999357	0.10097358	5.05937564	4.76532737	4.13915453	1.83E-06	***	0.78328527	0.07909112
GABA	C00334	HK2-ASO1-DPI-PER	4.6249454	0.22996464	0.04972267	4.74430429	4.77068947	4.35984242	1.83E-06	***	0.77829173	0.03869874
GABA	C00334	HK2-ASO1-MET	1.91890234	0.67720981	0.35291521	2.6887706	1.65267067	1.41526574	1.83E-06	***	0.32291534	0.11396173
GABA	C00334	HK2-ASO1-MET-PER	1.28011384	0.20109492	0.15709144	1.51204734	1.15443583	1.17385837	1.83E-06	***	0.2154192	0.03384051
GDP	C00035	Ctrl	36.8034953	2.53780981	0.06895567	34.694823	36.6960351	39.6199685	2.62E-08	***	1	0.06895567
GDP	C00035	HK2-ASO1	42.9566549	2.88612431	0.0671869	46.0131386	40.2781331	42.5786929	2.62E-08	***	1.16718954	0.07841984
GDP	C00035	DPI	60.2983315	6.27167203	0.10401071	54.492334	59.4527752	66.9498853	2.62E-08	***	1.638386	0.17040968
GDP	C00035	MET	62.8250066	6.44809032	0.10263573	70.1517508	60.3092335	58.0140355	2.62E-08	***	1.70703913	0.15203292
GDP	C00035	PER	35.4380845	0.28900706	0.00815527	35.1245296	35.693794	35.49593	2.62E-08	***	0.96289997	0.00785271
GDP	C00035	HK2-ASO1-DPI	37.7009086	1.00387039	0.02662722	37.2484652	38.8513743	37.0028862	2.62E-08	***	1.02438391	0.0272765
GDP	C00035	HK2-ASO1-DPI-PER	47.4251047	4.77620133	0.1007104	49.6809222	41.9388058	50.6555861	2.62E-08	***	1.28860328	0.12977575
GDP	C00035	HK2-ASO1-MET	37.9359744	2.29398856	0.06047001	40.272847	37.8476554	35.6874209	2.62E-08	***	1.03077097	0.06233073
GDP	C00035	HK2-ASO1-MET-PER	30.8128598	2.86339982	0.09292873	33.9995071	29.930925	28.45598	2.62E-08	***	0.83722645	0.07780239
Glc	C00031	Ctrl	779.044222	136.841882	0.17565355	707.274194	693.017391	936.841081	1.60E-05	***	1	0.17565355
Glc	C00031	HK2-ASO1	1785.8705	429.622302	0.24056744	1292.76606	2079.44746	1985.39799	1.60E-05	***	2.29238656	0.55147358
Glc	C00031	DPI	576.447206	190.200261	0.32995521	431.018932	506.633795	791.688891	1.60E-05	***	0.73994157	0.24414565
Glc	C00031	MET	566.360629	84.2336423	0.14872793	577.997204	476.913704	644.17098	1.60E-05	***	0.7269942	0.10812434
Glc	C00031	PER	984.058706	208.780343	0.21216249	1224.3932	847.498425	880.284498	1.60E-05	***	1.26316155	0.26799555
Glc	C00031	HK2-ASO1-DPI	2594.15155	494.853273	0.19075727	2042.451	2741.16227	2998.84139	1.60E-05	***	3.32991566	0.63520563
Glc	C00031	HK2-ASO1-DPI-PER	1591.30977	331.257344	0.20816647	1867.97427	1224.23313	1681.72191	1.60E-05	***	2.0426437	0.42520994
Glc	C00031	HK2-ASO1-MET	1966.37119	723.897233	0.36813865	1477.36002	1623.78373	2797.96984	1.60E-05	***	2.52408161	0.92921199
Glc	C00031	HK2-ASO1-MET-PER	1705.08698	219.42226	0.12868684	1551.07876	1956.32435	1607.85783	1.60E-05	***	2.18869088	0.28165572
GlcA	C00257	Ctrl	4207.42625	83.2995946	0.01979823	4113.55754	4272.53536	4236.18586	7.63E-16	***	1	0.01979823
GlcA	C00257	HK2-ASO1	2267.67705	254.361757	0.11216842	NA	2087.81622	2447.53797	7.63E-16	***	0.53897012	0.06045543
GlcA	C00257	DPI	4466.91376	139.571701	0.03124567	4612.60441	4453.74201	4334.39486	7.63E-16	***	1.06167369	0.0331727
GlcA	C00257	MET	4089.51621	260.193293	0.06362447	4169.87777	4300.04854	3798.62232	7.63E-16	***	0.97197573	0.06184144
GlcA	C00257	PER	4643.94803	308.18	0.06636164	4369.71105	4977.46019	4584.67286	7.63E-16	***	1.10375031	0.07324668
GlcA	C00257	HK2-ASO1-DPI	1623.69588	74.3673948	0.04580131	1591.80026	1570.59652	1708.69086	7.63E-16	***	0.3859119	0.01767527
GlcA	C00257	HK2-ASO1-DPI-PER	1460.35154	155.222085	0.1062909	1626.42859	1318.93746	1435.68858	7.63E-16	***	0.34708904	0.03689241
GlcA	C00257	HK2-ASO1-MET	849.917166	60.1933018	0.07082255	794.493589	913.952554	841.305355	7.63E-16	***	0.20200406	0.01430644
GlcA	C00257	HK2-ASO1-MET-PER	1034.73665	138.086717	0.13345107	1185.78601	1003.43874	914.985187	7.63E-16	***	0.24593102	0.03281976
GlcN	C00329	Ctrl	1917.69454	165.579074	0.08634278	1761.42646	1900.42605	2091.23112	3.76E-06	***	1	0.08634278
GlcN	C00329	HK2-ASO1	4904.62994	473.473001	0.09653593	4945.19487	5442.10589	4722.58906	3.76E-06	***	2.55756578	0.24689698
GlcN	C00329	DPI	888.025335	404.496598	0.45550119	555.973349	769.580589	1338.52207	3.76E-06	***	0.46306923	0.21092859
GlcN	C00329	MET	1330.92101	303.127616	0.22775778	1591.76213	998.367363	1402.63354	3.76E-06	***	0.69402138	0.15806877
GlcN	C00329	PER	878.88391	344.32618	0.39177663	699.521141	661.266961	1275.86363	3.76E-06	***	0.45830235	0.17955215
GlcN	C00329	HK2-ASO1-DPI	1371.80722	357.924171	0.26091434	1784.40613	1144.73965	1186.27587	3.76E-06	***	0.71534188	0.18664295
GlcN	C00329	HK2-ASO1-DPI-PER	4078.93029	216.467894	0.05306977	3906.40484	4008.					

GlcN-6P	C00352	MET	10.4363505	0.27313656	0.02617165	10.7253432	10.182465	10.4012432	6.19E-08	***	1.97440825	0.05167353
GlcN-6P	C00352	PER	9.09439933	0.29136378	0.03203772	9.22498821	9.29762446	8.76058531	6.19E-08	***	1.72053029	0.05512186
GlcN-6P	C00352	HK2-ASO1-DPI	7.05537394	0.51866244	0.0735131	6.5391236	6.77411965	6.7380898	6.19E-08	***	1.33477584	0.09812352
GlcN-6P	C00352	HK2-ASO1-DPI-PER	6.41394115	0.71649596	0.11170916	7.06378059	5.64557133	6.53247152	6.19E-08	***	1.21342594	0.13555079
GlcN-6P	C00352	HK2-ASO1-MET	3.45319692	0.59090438	0.17111807	3.71716258	3.86610819	2.77631998	6.19E-08	***	0.65329547	0.11179066
GlcN-6P	C00352	HK2-ASO1-MET-PER	4.14189585	0.43510379	0.10504943	4.32422474	4.45617245	3.64529036	6.19E-08	***	0.78358746	0.08231541
GlcNac	C00140	Ctrl	3.0944945	1.57169983	0.50790196	2.70815659	1.75198848	4.82333842	2.50E-07	***	1	0.50790196
GlcNac	C00140	HK2-ASO1	4.45186405	1.27951439	0.28741093	3.83425032	3.59831467	5.92302716	2.50E-07	***	1.43864016	0.41348091
GlcNac	C00140	DPI	2.58265838	0.19708153	0.07630956	2.48375118	2.45461788	2.80960607	2.50E-07	***	0.83459783	0.0636878
GlcNac	C00140	MET	2.30149826	0.69311469	0.30115803	2.01261144	3.09232876	1.79955458	2.50E-07	***	0.74373965	0.22398317
GlcNac	C00140	PER	4.69350171	0.87487486	0.18640131	4.65797559	5.58559848	3.83693105	2.50E-07	***	1.51672647	0.2827198
GlcNac	C00140	HK2-ASO1-DPI	3.38532228	0.15336406	0.04530265	3.2223007	3.40692893	3.52673722	2.50E-07	***	1.09398232	0.04956029
GlcNac	C00140	HK2-ASO1-DPI-PER	11.1998937	3.66963684	0.32764925	14.029411	7.0535406	12.5167296	2.50E-07	***	3.6192967	1.18585987
GlcNac	C00140	HK2-ASO1-MET	18.905779	3.56070859	0.18833969	18.3013983	15.6859403	22.7299984	2.50E-07	***	6.10948865	1.15065521
GlcNac	C00140	HK2-ASO1-MET-PER	31.2366722	10.3462173	0.33122022	27.9168101	42.8353204	22.957886	2.50E-07	***	10.094273	3.34342727
GlcNac-6P	C00357	Ctrl	1.04348049	0.13821652	0.13245722	1.02982439	1.18801816	0.91259891	1.10E-13	***	1	0.13245722
GlcNac-6P	C00357	HK2-ASO1	0.52925231	0.54996816	1.03914173	NA	0.14036609	0.91813852	1.10E-13	***	0.50719904	0.52705169
GlcNac-6P	C00357	DPI	1.16454398	0.29854454	0.25636175	1.07521233	1.49755635	0.92086324	1.10E-13	***	1.11601893	0.28610457
GlcNac-6P	C00357	MET	1.9209794	0.05522438	0.02874803	1.85765628	1.95915011	1.94613181	1.10E-13	***	1.84093466	0.05292325
GlcNac-6P	C00357	PER	1.51173373	0.01460454	0.00966709	1.52370921	1.51602868	1.49546331	1.10E-13	***	1.44874174	0.01399599
GlcNac-6P	C00357	HK2-ASO1-DPI	6.21582353	0.21819851	0.03510372	6.43308375	6.21768817	5.99669867	1.10E-13	***	5.95681818	0.20910646
GlcNac-6P	C00357	HK2-ASO1-DPI-PER	22.9616642	2.65607218	0.1156742	23.914933	19.9605144	25.0095454	1.10E-13	***	22.0048813	2.54539705
GlcNac-6P	C00357	HK2-ASO1-MET	18.1459959	0.70393726	0.03879298	18.5309531	17.3335305	18.5735041	1.10E-13	***	17.3898756	0.67460511
GlcNac-6P	C00357	HK2-ASO1-MET-PER	25.5941452	3.58799792	0.14018823	26.2987538	28.7775691	21.7061126	1.10E-13	***	24.5276702	3.43849068
Gln	C00064	Ctrl	8356.2361	148.234828	0.01773943	8382.2138	8489.76494	8196.72956	7.79E-07	***	1	0.01773943
Gln	C00064	HK2-ASO1	9589.38346	1204.52346	0.1256101	8283.97415	9826.38793	10657.7883	7.79E-07	***	1.14757211	0.14414665
Gln	C00064	DPI	10747.556	1001.12922	0.09314948	9691.23792	10869.0165	11682.4137	7.79E-07	***	1.2861719	0.11980624
Gln	C00064	MET	11475.9422	989.919679	0.08626043	11982.952	10335.2244	12109.6502	7.79E-07	***	1.37333867	0.1846478
Gln	C00064	PER	8836.85516	164.631921	0.01863015	9016.03082	8692.26069	8802.27397	7.79E-07	***	1.05751621	0.01970168
Gln	C00064	HK2-ASO1-DPI	12654.2552	560.390929	0.04428478	12009.1407	12933.1267	13020.4982	7.79E-07	***	1.51434869	0.0670626
Gln	C00064	HK2-ASO1-DPI-PER	8452.06962	756.900116	0.08955204	9165.76526	7698.32744	8532.11616	7.79E-07	***	1.0114685	0.09057907
Gln	C00064	HK2-ASO1-MET	8179.34404	1145.71482	0.14007417	8420.44447	6932.26579	9185.32185	7.79E-07	***	0.97883113	0.13710896
Gln	C00064	HK2-ASO1-MET-PER	6576.38807	351.824036	0.05349806	6675.27215	7688.18877	6185.70329	7.79E-07	***	0.78700362	0.04210317
Glu	C00025	Ctrl	7478.9157	490.135135	0.06553559	6923.26951	7849.88081	7663.59677	1.08E-12	***	1	0.06553559
Glu	C00025	HK2-ASO1	9285.93616	690.828603	0.07439515	8999.39127	8784.48915	10073.9281	1.08E-12	***	1.2416153	0.09237016
Glu	C00025	DPI	7797.5313	373.893039	0.04795018	7369.3073	8059.22648	7964.06012	1.08E-12	***	1.04260184	0.04999295
Glu	C00025	MET	6935.4164	308.8771	0.0445362	7275.76608	6857.58134	6672.90179	1.08E-12	***	0.92732913	0.04129972
Glu	C00025	PER	8912.71189	629.832886	0.07066681	8334.76651	9584.01143	8819.35772	1.08E-12	***	1.19171177	0.08421447
Glu	C00025	HK2-ASO1-DPI	7536.21026	392.018049	0.05201793	7986.99636	7275.15115	7346.48327	1.08E-12	***	1.00766081	0.05241643
Glu	C00025	HK2-ASO1-DPI-PER	4210.84924	334.337705	0.07939912	4462.00882	3831.35834	4339.18055	1.08E-12	***	0.56302938	0.04470403
Glu	C00025	HK2-ASO1-MET	3340.59202	495.349567	0.14828197	3868.45095	3267.43705	2885.88807	1.08E-12	***	0.44666796	0.06623281
Glu	C00025	HK2-ASO1-MET-PER	2582.34212	237.509043	0.09197427	2810.39489	2600.24183	2336.38963	1.08E-12	***	0.34528296	0.03175715
Gluca	C00191	Ctrl	0.64636789	0.39344864	0.60870697	0.6673566	1.02890208	0.24284499	7.71E-06	***	1	0.60870697
Gluca	C00191	HK2-ASO1	0.60107074	0.76323222	1.26978767	1.14075142	0.06138407	NA	7.71E-06	***	0.92929049	1.18800157
Gluca	C00191	DPI	1.39906815	0.09338218	0.06674598	1.2999197	1.48534959	1.41193515	7.71E-06	***	2.16450751	0.14447218
Gluca	C00191	MET	0.84324542	0.02316338	0.02746932	0.83684242	0.86893677	0.82395708	7.71E-06	***	1.30459053	0.03583621
Gluca	C00191	PER	1.17597619	0.37473605	0.31865956	1.36805565	1.4157284	0.74414453	7.71E-06	***	1.81936048	0.57975661
Gluca	C00191	HK2-ASO1-DPI	0	0	0	0	0	0	7.71E-06	***	0	0
Gluca	C00191	HK2-ASO1-DPI-PER	0	0	0	0	0	0	7.71E-06	***	0	0
Gluca	C00191	HK2-ASO1-MET	0	0	0	0	0	0	7.71E-06	***	0	0
Gluca	C00191	HK2-ASO1-MET-PER	0	0	0	0	0	0	7.71E-06	***	0	0
Gly	C00037	Ctrl	598.804562	46.8534519	0.07824498	638.036153	611.451866	546.925666	7.54E-06	***	1	0.07824498
Gly	C00037	HK2-ASO1	819.692326	82.0812077	0.10013661	909.852951	799.922506	749.301522	7.54E-06	***	1.36888123	0.13707512
Gly	C00037	DPI	668.234998	124.762153	0.18670401	533.602191	591.154308	779.948488	7.54E-06	***	1.11594841	0.20835204
Gly	C00037	MET	599.422567	54.8402546	0.09148847	655.569921	545.990273	596.707506	7.54E-06	***	1.00103206	0.09158289
Gly	C00037	PER	623.899057	26.4200965	0.04234675	636.630523	641.542777	593.523871	7.54E-06	***	1.04190766	0.0441214
Gly	C00037	HK2-ASO1-DPI	981.728111	153.510331	0.15636746	1153.60675	933.321717	858.255861	7.54E-06	***	1.63948001	0.25636133
Gly	C00037	HK2-ASO1-DPI-PER	560.389685	40.83193	0.07286346	557.317892	521.180402	602.670759	7.54E-06	***	0.93584739	0.06818908
Gly	C00037	HK2-ASO1-MET	499.286202	99.6839557	0.19965293	607.296693	410.825313	479.736601	7.54E-06	***	0.83380494	0.1664716
Gly	C00037	HK2-ASO1-MET-PER	416.308347	12.6382824	0.03035798	411.413339	430.661957	406.849745	7.54E-06	***	0.69523242	0.02110586
Glycerol	C00116	Ctrl	0.21112481	0.13607335	0.64451613	0.34303559	0.21909921	0.07123963	0.06767973		1	0.64451613
Glycerol	C00116	HK2-ASO1	1.03264209	1.16504343	1.1282161	1.8564522	NA	0.20883198	0.06767973		4.89114517	5.51826872
Glycerol	C00116	DPI	0	0	0	0	0	0	0.06767973		0	0
Glycerol	C00116	MET	0	0	0	0	0	0	0.06767973		0	0
Glycerol	C00116	PER	0.12833204	0.09196222	0.71659595	NA	0.19335914	0.06330493	0.06767973		0.60784915	0.43558224
Glycerol	C00116	HK2-ASO1-DPI	0.4229304	0.29448407	0.69629441	0.24408753	0.26188768	0.76281598	0.06767973		2.00322453	1.39483403
Glycerol	C00116	HK2-ASO1-DPI-PER	0.1756321	0.01719139	0.09788295	NA	0.16347596	0.18778825	0.06767973		0.83188757	0.08142761
Glycerol	C00116	HK2-ASO1-MET	0	0	0	0	0	0	0.06767973		0	0
Glycerol	C00116	HK2-ASO1-MET-PER	0	0	0	0	0	0	0.06767973		0	0
Glycerol-3-P	C00093	Ctrl	55.9248372	4.95442971	0.08859086	58.0514446	59.4609389	50.2621282	5.17E-16	***	1	0.08859086
Glycerol-3-P	C00093	HK2-ASO1	7.66045803	0.63334322	0.08267694	NA	7.21261674	8.10829931	5.17E-16	***	0.13697774	0.0113249
Glycerol-3-P	C00093	DPI	25.0177368	2.18295752	0.08725639	22.82113	25.0452964	27.1867841	5.17E-16	***	0.44734572	0.03903378
Glycerol-3-P	C00093	MET	18.3575196	2.15198174	0.11722617	20.6169925	18.12339	16.3321761	5.17E-16	***	0.32825343	0.03847989
Glycerol-3-P	C00093	PER	53.5605174	2.96397529	0.05533881	56.7159346	53.1307009	50.8349167	5.17E-16	***	0.95772326	0.05299927
Glycerol-3-P	C00093	HK2-ASO1-DPI	7.43218334	0.60114814	0.08088446	7.33579431	6.88505361	8.0757021	5.17E-16	***	0.13289593	0.01074922
Glycerol-3-P	C00093	HK2-ASO1-DPI-PER	5.53285691	0.6504272	0.11755721	4.82889879	5.65814726	6.11152467	5.17E-16	***	0.0989338	0.01163038
Glycerol-3-P	C00093	HK2-ASO1-MET	3.3									



GMP	C00144	HK2-ASO1-DPI	25.2884533	3.04674158	0.12047955	28.8061274	23.5755605	23.4836719	4.96E-14	***	2.6951885	0.32471511
GMP	C00144	HK2-ASO1-DPI-PER	63.4237123	8.0617581	0.12710953	63.2693191	55.4402596	71.5615581	4.96E-14	***	6.75956169	0.85920469
GMP	C00144	HK2-ASO1-MET	79.9878921	4.97817685	0.06223663	84.2501573	74.51654	81.196979	4.96E-14	***	8.52493605	0.53056329
GMP	C00144	HK2-ASO1-MET-PER	103.935694	11.7706532	0.11324938	109.139944	112.207166	90.459972	4.96E-14	***	11.0772408	1.25449069
GSH	C00051	Ctrl	1195.08261	20.8693007	0.01746264	1217.17009	1192.38366	1175.6941	2.72E-12	***	1	0.01746264
GSH	C00051	HK2-ASO1	1157.78967	123.529331	0.1066941	NA	1070.44124	1245.1381	2.72E-12	***	0.96879467	0.10336468
GSH	C00051	DPI	1259.64941	120.291133	0.09549572	1395.1983	1218.13959	1165.61033	2.72E-12	***	1.05402705	0.10065508
GSH	C00051	MET	1170.41083	139.405498	0.11910818	1161.64691	1313.99152	1035.59405	2.72E-12	***	0.97935558	0.11664926
GSH	C00051	PER	1527.62654	119.425167	0.07817694	1467.84922	1665.13664	1449.89375	2.72E-12	***	1.2782602	0.09993047
GSH	C00051	HK2-ASO1-DPI	817.012808	29.4257634	0.03601628	796.388593	803.939945	850.709887	2.72E-12	***	0.68364546	0.02462237
GSH	C00051	HK2-ASO1-DPI-PER	457.208598	68.4884255	0.14979689	530.049911	394.118263	447.457621	2.72E-12	***	0.38257489	0.05730853
GSH	C00051	HK2-ASO1-MET	236.044826	67.7436881	0.28699501	244.461614	299.186826	164.486038	2.72E-12	***	0.1975134	0.05668536
GSH	C00051	HK2-ASO1-MET-PER	161.129114	56.4013129	0.350038	226.175596	125.808646	131.4031	2.72E-12	***	0.13482676	0.04719449
GSH/GSSG	NA	NA	8.57211283	0.58539129	0.0682902	9.24799516	8.22578937	8.24255395	7.94E-08	***	1	0.0682902
GSH/GSSG	NA	HK2-ASO1	8.65314575	0.92629708	0.10704744	NA	7.9981548	9.3081367	7.94E-08	***	1.00945309	0.10805937
GSH/GSSG	NA	DPI	8.99790455	0.91073656	0.10121652	10.0493139	8.490771	8.45362877	7.94E-08	***	1.04967174	0.10624412
GSH/GSSG	NA	MET	9.80840298	1.83087433	0.18666386	8.6065638	11.9155721	8.903073	7.94E-08	***	1.14422234	0.21358495
GSH/GSSG	NA	PER	10.3293131	1.50533118	0.14573391	9.98861862	11.9757929	9.02352772	7.94E-08	***	1.20499033	0.17560795
GSH/GSSG	NA	HK2-ASO1-DPI	6.10717374	0.27991957	0.04583455	5.79501737	6.19063122	6.33587262	7.94E-08	***	0.71244673	0.03265468
GSH/GSSG	NA	HK2-ASO1-DPI-PER	4.84367239	0.25768487	0.05320031	4.74979013	4.64609138	5.13513567	7.94E-08	***	0.56505	0.03006083
GSH/GSSG	NA	HK2-ASO1-MET	3.34175696	0.71645351	0.21439426	3.04735858	4.15851036	2.81940194	7.94E-08	***	0.38984052	0.08357957
GSH/GSSG	NA	HK2-ASO1-MET-PER	2.88524197	0.66271639	0.22969179	3.60036862	2.29180067	2.76355662	7.94E-08	***	0.33658469	0.07731074
GSSG	C00127	Ctrl	139.736113	7.12852394	0.05101419	131.614481	144.956746	142.637113	2.04E-08	***	1	0.05101419
GSSG	C00127	HK2-ASO1	146.603003	22.1713155	0.15123371	172.204203	133.836024	133.768871	2.04E-08	***	1.04914184	0.15866561
GSSG	C00127	DPI	140.061443	2.98690152	0.02132655	138.835179	143.466311	137.882839	2.04E-08	***	1.00232817	0.0213753
GSSG	C00127	MET	120.522026	12.8738875	0.10681772	134.972207	110.275151	116.318719	2.04E-08	***	0.86249734	0.09213
GSSG	C00127	PER	148.891101	10.9482299	0.0735318	146.952174	139.04187	160.67926	2.04E-08	***	1.06551626	0.07834932
GSSG	C00127	HK2-ASO1-DPI	133.853062	3.9833459	0.0283769	137.426438	129.86397	134.26878	2.04E-08	***	0.95789885	0.0271822
GSSG	C00127	HK2-ASO1-DPI-PER	94.5195932	14.8321866	0.15692182	111.594386	84.8279191	87.1364749	2.04E-08	***	0.67641493	0.10614426
GSSG	C00127	HK2-ASO1-MET	70.1690837	11.0476942	0.1574439	80.2208232	71.9456729	58.340755	2.04E-08	***	0.50215425	0.07906112
GSSG	C00127	HK2-ASO1-MET-PER	55.0879256	7.63761343	0.13864406	62.820122	54.8951082	47.5485465	2.04E-08	***	0.39422827	0.05465741
His	C00135	Ctrl	946.254098	37.9270454	0.04008125	913.144106	937.98457	987.63362	5.21E-05	***	1	0.04008125
His	C00135	HK2-ASO1	1083.74494	239.251923	0.22076405	816.825447	1155.50405	1278.90533	5.21E-05	***	1.14530013	0.2528411
His	C00135	DPI	1128.27593	111.91021	0.09918692	1042.72341	1087.18044	1254.92394	5.21E-05	***	1.19236041	0.11826655
His	C00135	MET	1208.63512	88.5853577	0.07329371	1308.90076	1176.03703	1140.96757	5.21E-05	***	1.27728389	0.09361688
His	C00135	PER	1040.424	26.6005043	0.02556698	1070.67252	1029.92111	1020.67836	5.21E-05	***	1.09951862	0.02811138
His	C00135	HK2-ASO1-DPI	1456.41888	118.9959	0.08170445	1384.24664	1391.24593	1593.76408	5.21E-05	***	1.53914143	0.1257547
His	C00135	HK2-ASO1-DPI-PER	943.973627	152.843868	0.1619154	1106.97353	803.868885	921.078466	5.21E-05	***	0.99759	0.16152518
His	C00135	HK2-ASO1-MET	887.413778	176.117134	0.19846112	859.318793	727.032923	1075.88962	5.21E-05	***	0.93781763	0.18612034
His	C00135	HK2-ASO1-MET-PER	637.896595	55.5437164	0.08707323	676.074375	663.438943	574.176469	5.21E-05	***	0.67412822	0.05869852
Homocysteine	C00155	Ctrl	0	0	NA	0	0	0	6.28E-09	***	NA	NA
Homocysteine	C00155	HK2-ASO1	0	0	NA	0	0	0	6.28E-09	***	NA	NA
Homocysteine	C00155	DPI	0	0	NA	0	0	0	6.28E-09	***	NA	NA
Homocysteine	C00155	MET	0	0	NA	0	0	0	6.28E-09	***	NA	NA
Homocysteine	C00155	PER	0	0	NA	0	0	0	6.28E-09	***	NA	NA
Homocysteine	C00155	HK2-ASO1-DPI	0	0	NA	0	0	0	6.28E-09	***	NA	NA
Homocysteine	C00155	HK2-ASO1-DPI-PER	3.59511696	1.34587983	0.37436329	4.63633471	2.0753626	4.07365357	6.28E-09	***	Inf	Inf
Homocysteine	C00155	HK2-ASO1-MET	11.6125379	4.21406945	0.36288962	8.84648764	9.5285607	16.4625655	6.28E-09	***	Inf	Inf
Homocysteine	C00155	HK2-ASO1-MET-PER	11.7582101	1.78264696	0.1516087	10.969265	13.7991955	10.5061698	6.28E-09	***	Inf	Inf
HS2O3	C00320	Ctrl	9.18404878	0.85378551	0.09296396	8.59599756	8.79280325	10.1633455	1.35E-11	***	1	0.09296396
HS2O3	C00320	HK2-ASO1	17.2588321	2.83061211	0.16400948	20.5209169	15.450401	15.8051783	1.35E-11	***	1.87921825	0.30820961
HS2O3	C00320	DPI	13.3812081	1.12952793	0.08441151	13.9204758	14.1400324	12.0831162	1.35E-11	***	1.45700534	0.12298801
HS2O3	C00320	MET	14.6782804	1.27135003	0.08661437	14.3259987	16.0886231	13.6202195	1.35E-11	***	1.59823633	0.13843022
HS2O3	C00320	PER	9.01381022	0.49049908	0.0544163	9.48236731	8.50397763	9.05508574	1.35E-11	***	0.98146367	0.05340773
HS2O3	C00320	HK2-ASO1-DPI	24.3323198	2.17735904	0.08948424	25.2481868	21.846633	25.9021394	1.35E-11	***	2.64941099	0.23780552
HS2O3	C00320	HK2-ASO1-DPI-PER	25.8502404	1.08380077	0.04192614	26.7703634	24.6555672	26.1247905	1.35E-11	***	2.81468892	0.11800904
HS2O3	C00320	HK2-ASO1-MET	29.897314	3.19689728	0.10692925	33.5761733	28.3217942	27.7939747	1.35E-11	***	3.25535227	0.34809237
HS2O3	C00320	HK2-ASO1-MET-PER	28.1426898	0.39577775	0.01406325	27.9247224	28.5995351	27.903812	1.35E-11	***	3.064301	0.04309404
Hypoxanthine	C00262	Ctrl	0	0	NA	0	0	0	1.08E-08	***	NA	NA
Hypoxanthine	C00262	HK2-ASO1	0	0	NA	0	0	0	1.08E-08	***	NA	NA
Hypoxanthine	C00262	DPI	0	0	NA	0	0	0	1.08E-08	***	NA	NA
Hypoxanthine	C00262	MET	0	0	NA	0	0	0	1.08E-08	***	NA	NA
Hypoxanthine	C00262	PER	0	0	NA	0	0	0	1.08E-08	***	NA	NA
Hypoxanthine	C00262	HK2-ASO1-DPI	0	0	NA	0	0	0	1.08E-08	***	NA	NA
Hypoxanthine	C00262	HK2-ASO1-DPI-PER	3.19398958	1.78557362	0.55904178	4.69684531	1.22012904	3.66499439	1.08E-08	***	Inf	Inf
Hypoxanthine	C00262	HK2-ASO1-MET	16.7291731	6.30609016	0.37695169	15.5688994	11.0837902	23.5348298	1.08E-08	***	Inf	Inf
Hypoxanthine	C00262	HK2-ASO1-MET-PER	16.3553351	2.39780839	0.14660711	16.4152783	18.7226099	13.9281172	1.08E-08	***	Inf	Inf
IMP	C00130	Ctrl	4.0602754	0.35935732	0.08850565	3.77660085	4.46438019	3.93984515	2.87E-09	***	1	0.08850565
IMP	C00130	HK2-ASO1	8.99359132	1.21574394	0.13517892	10.1392856	7.71819751	9.12329087	2.87E-09	***	2.21502003	0.29942401
IMP	C00130	DPI	7.46588775	0.80385156	0.10766992	6.89793306	7.11406015	8.38567004	2.87E-09	***	1.83876388	0.19779757
IMP	C00130	MET	6.45421124	0.89975134	0.13940531	6.86169699	7.0781271	5.42280962	2.87E-09	***	1.58959938	0.2215986
IMP	C00130	PER	5.78620385	0.60459409	0.1044889	5.2368881	6.43398793	5.68773552	2.87E-09	***	1.4250767	0.1489047
IMP	C00130	HK2-ASO1-DPI	4.32431689	0.25546459	0.05907629	4.59578357	4.28854124	4.08862586	2.87E-09	***	1.06503044	0.06291805
IMP	C00130	HK2-ASO1-DPI-PER	2.14184928	0.22385343	0.10451409	1.93294469	2.37813295	2.11447019	2.87E-09	***	0.5275133	0.05513257
IMP	C00130	HK2-ASO1-MET	3.84889013	0.26445115	0.06870842	3.91322406	4.07523867	3.55820765	2.87E-09	***	0.94793819	0.06513133
IMP	C00130	HK2-ASO1-MET-PER	3.72838667	0.31759941	0.08518414	3.75239858	4.03329861	3.3994628	2.87E-09	***	0.91825955	0.07822115
Inosine	C00294	Ctrl	0.21630726	0.10679852	0.49373528	0.1407893	0.29182522	NA	5.30E-07	***	1	0.49373528
Inosine	C00294	HK2-ASO1	0.21079883	0.00350842	0.01664345	0.21327966	NA	0.208318	5.30E-07	***	0.97453424	0.01621962
Inosine	C00294	DPI	0.17711623	0.00768298	0.04337815	NA	0.18254892	0.17168355	5.30E-07	***	0.818	

Inosine	C00294	HK2-ASO1-MET	0	0	NA	0	0	0	0	5.30E-07	***	0	0
Inosine	C00294	HK2-ASO1-MET-PER	0	0	NA	0	0	0	0	5.30E-07	***	0	0
Inositol	C00137	Ctrl	1421.8363	45.5569521	0.03204093	1375.50658	1423.42331	1466.57901	5.18E-10	***	1	0.03204093	
Inositol	C00137	HK2-ASO1	1604.14224	135.934207	0.0847395	1673.13912	1447.54678	1691.74082	5.18E-10	***	1.12821866	0.09560468	
Inositol	C00137	DPI	1655.23705	103.110325	0.06229339	1568.74243	1627.62713	1769.34161	5.18E-10	***	1.16415445	0.07251913	
Inositol	C00137	MET	1606.40817	87.2421238	0.05430881	1688.48863	1615.94745	1514.78843	5.18E-10	***	1.12981232	0.06135877	
Inositol	C00137	PER	1172.14999	15.1059887	0.01288742	1161.02311	1189.3468	1166.08006	5.18E-10	***	0.82439166	0.01062428	
Inositol	C00137	HK2-ASO1-DPI	1718.12279	95.8059736	0.05576201	1696.91019	1634.70088	1822.7573	5.18E-10	***	1.20838298	0.06738186	
Inositol	C00137	HK2-ASO1-DPI-PER	941.42153	96.6660461	0.10268094	1034.22442	841.307497	948.73267	5.18E-10	***	0.66211668	0.06798676	
Inositol	C00137	HK2-ASO1-MET	1166.97094	110.319157	0.09453462	1157.43524	1061.72915	1281.74842	5.18E-10	***	0.82074915	0.07758921	
Inositol	C00137	HK2-ASO1-MET-PER	788.959154	70.6281727	0.0895207	846.343762	810.452443	710.081256	5.18E-10	***	0.55488747	0.04967391	
Isobutyryl-CoA	C00630	Ctrl	0.04846467	0.01296009	0.26741312	0.06340511	0.04173708	0.04025183	3.85E-06	***	1	0.26741312	
Isobutyryl-CoA	C00630	HK2-ASO1	0.01452479	0.00937616	0.64552785	0.02395116	0.00519966	0.01442355	3.85E-06	***	0.29969855	0.19346376	
Isobutyryl-CoA	C00630	DPI	0.05427356	0.01750982	0.32262152	0.0340935	0.06328306	0.06544412	3.85E-06	***	1.11985809	0.36129032	
Isobutyryl-CoA	C00630	MET	0.02612392	0.00870487	0.33321453	0.03326176	0.01642612	0.02868388	3.85E-06	***	0.53903005	0.17961265	
Isobutyryl-CoA	C00630	PER	0.05774789	0.01826178	0.31623289	0.06634139	0.07012766	0.03677461	3.85E-06	***	1.19154595	0.37680602	
Isobutyryl-CoA	C00630	HK2-ASO1-DPI	0.00922345	0.00504296	0.54675408	0.0074119	0.0053365	0.01492194	3.85E-06	***	0.19039128	0.1040543	
Isobutyryl-CoA	C00630	HK2-ASO1-DPI-PER	0.0014956	3.23E-05	0.02159673	0.00151844	0.00147276	NA	3.85E-06	***	0.03085951	0.00066646	
Isobutyryl-CoA	C00630	HK2-ASO1-MET	0	0	NA	0	0	0	3.85E-06	***	0	0	
Isobutyryl-CoA	C00630	HK2-ASO1-MET-PER	0	0	NA	0	0	0	3.85E-06	***	0	0	
Lac	C00186	Ctrl	276.65971	16.7236315	0.06044838	272.293843	295.133262	262.552025	1.45E-12	***	1	0.06044838	
Lac	C00186	HK2-ASO1	55.933517	3.74362929	0.06692998	NA	53.2863714	58.5806627	1.45E-12	***	0.20217442	0.01353153	
Lac	C00186	DPI	772.537367	127.045521	0.16445227	628.584592	820.044116	868.983394	1.45E-12	***	2.79237395	0.45921223	
Lac	C00186	MET	726.488682	75.3737299	0.10375073	812.684249	672.953354	693.828442	1.45E-12	***	2.62592874	0.27244032	
Lac	C00186	PER	331.923798	14.2706965	0.04299389	315.567335	341.834764	338.369295	1.45E-12	***	1.19975474	0.05158213	
Lac	C00186	HK2-ASO1-DPI	82.9526659	13.6256132	0.16425769	98.6304652	76.25932	73.9682126	1.45E-12	***	0.29983645	0.04925044	
Lac	C00186	HK2-ASO1-DPI-PER	49.0653043	2.02498312	0.04127118	49.1179497	47.0145118	51.0634514	1.45E-12	***	0.17734893	0.0073194	
Lac	C00186	HK2-ASO1-MET	53.6493759	14.8617916	0.27701705	70.5774036	42.7452266	47.6254976	1.45E-12	***	0.19391828	0.05371867	
Lac	C00186	HK2-ASO1-MET-PER	49.6039356	1.75384441	0.03535696	51.2207092	49.8517223	47.7393753	1.45E-12	***	0.17929584	0.00633936	
Leu/Ile	C00123	Ctrl	18659.4834	945.521214	0.05067272	17649.2927	18805.9056	19523.2519	2.02E-07	***	1	0.05067242	
Leu/Ile	C00123	HK2-ASO1	24311.5164	990.056492	0.04072377	NA	23611.4408	25011.5921	2.02E-07	***	1.30290405	0.05305916	
Leu/Ile	C00123	DPI	23249.6923	2591.17196	0.11144973	20880.0661	22852.4731	26016.5376	2.02E-07	***	1.24599871	0.13886622	
Leu/Ile	C00123	MET	21410.6024	1236.92654	0.05777168	22838.8525	20688.5122	20704.4425	2.02E-07	***	1.14743811	0.06628943	
Leu/Ile	C00123	PER	21058.5647	322.581282	0.01531829	20915.046	21427.9991	20832.6488	2.02E-07	***	1.12857169	0.01728779	
Leu/Ile	C00123	HK2-ASO1-DPI	30159.4341	1607.2421	0.05329152	28814.5659	29724.2924	31939.4441	2.02E-07	***	1.61630595	0.0861354	
Leu/Ile	C00123	HK2-ASO1-DPI-PER	19818.2388	2356.28835	0.11889494	21933.0868	17278.3647	20243.2649	2.02E-07	***	1.06210008	0.12627833	
Leu/Ile	C00123	HK2-ASO1-MET	17834.6979	2323.26825	0.13026676	17698.0072	15582.7928	20223.2937	2.02E-07	***	0.95579805	0.12450871	
Leu/Ile	C00123	HK2-ASO1-MET-PER	14275.6006	644.538121	0.04514963	14470.7685	14799.9985	13556.0347	2.02E-07	***	0.76505873	0.03454212	
Lys	C00047	Ctrl	104.004825	4.96137337	0.0477033	98.6063477	105.043473	108.364654	8.82E-06	***	1	0.0477033	
Lys	C00047	HK2-ASO1	168.236825	8.57298569	0.05095784	NA	174.298841	162.174809	8.82E-06	***	1.61758674	0.08242873	
Lys	C00047	DPI	160.131771	28.3251969	0.1768868	128.572226	168.47426	183.348825	8.82E-06	***	1.53965714	0.27234503	
Lys	C00047	MET	174.239125	23.2448074	0.13340751	194.691943	148.96005	179.065381	8.82E-06	***	1.67529848	0.2234974	
Lys	C00047	PER	117.304646	2.51175967	0.02141228	120.172087	116.248098	115.493745	8.82E-06	***	1.12787694	0.02415041	
Lys	C00047	HK2-ASO1-DPI	279.003825	32.3008343	0.08351439	304.171719	274.657701	258.182056	8.82E-06	***	2.68260464	0.22403609	
Lys	C00047	HK2-ASO1-DPI-PER	192.10835	20.5275521	0.10685403	206.459688	168.595309	201.270055	8.82E-06	***	1.84710998	0.19737115	
Lys	C00047	HK2-ASO1-MET	215.726886	48.7050969	0.22577203	252.578842	160.509109	234.092706	8.82E-06	***	2.07420075	0.46829652	
Lys	C00047	HK2-ASO1-MET-PER	180.807949	25.3689397	0.14030876	170.334514	209.736722	162.352612	8.82E-06	***	1.73845732	0.2439208	
Mal	C00149	Ctrl	2051.40572	30.9866717	0.01510509	2084.61173	2046.3437	2023.26173	3.06E-15	***	1	0.01510509	
Mal	C00149	HK2-ASO1	1255.05377	135.937301	0.10831193	1409.92252	1155.46763	1199.77115	3.06E-15	***	0.61180183	0.06626544	
Mal	C00149	DPI	3214.23738	97.7177491	0.03040153	3182.09863	3323.97683	3136.63667	3.06E-15	***	1.56684626	0.04763453	
Mal	C00149	MET	3192.3894	114.574333	0.03588984	3314.39704	3175.69	3087.08117	3.06E-15	***	1.55619601	0.05585162	
Mal	C00149	PER	2238.63656	208.151254	0.09298126	2319.95724	2393.85157	2002.10086	3.06E-15	***	1.09126953	0.10146762	
Mal	C00149	HK2-ASO1-DPI	1333.28768	69.879145	0.05241115	1408.67803	1320.49864	1270.68636	3.06E-15	***	0.64993856	0.03406403	
Mal	C00149	HK2-ASO1-DPI-PER	1045.93265	54.6753867	0.05227429	1066.64229	983.927747	1087.22791	3.06E-15	***	0.50986143	0.02665264	
Mal	C00149	HK2-ASO1-MET	1123.00921	168.346073	0.14990623	1296.66843	960.534001	1111.82519	3.06E-15	***	0.54743398	0.08206376	
Mal	C00149	HK2-ASO1-MET-PER	981.126561	96.2749726	0.09812697	997.064296	1068.43813	877.877256	3.06E-15	***	0.47827036	0.04693122	
Malonyl-CoA	C00083	Ctrl	0.00041055	NA	NA	0.00041055	NA	NA	1.08E-232	***	1	NA	
Malonyl-CoA	C00083	HK2-ASO1	0	0	NA	0	0	0	1.08E-232	***	0	0	
Malonyl-CoA	C00083	DPI	0	0	NA	0	0	0	1.08E-232	***	0	0	
Malonyl-CoA	C00083	MET	0	0	NA	0	0	0	1.08E-232	***	0	0	
Malonyl-CoA	C00083	PER	0	0	NA	0	0	0	1.08E-232	***	0	0	
Malonyl-CoA	C00083	HK2-ASO1-DPI	0	0	NA	0	0	0	1.08E-232	***	0	0	
Malonyl-CoA	C00083	HK2-ASO1-DPI-PER	0	0	NA	0	0	0	1.08E-232	***	0	0	
Malonyl-CoA	C00083	HK2-ASO1-MET	0	0	NA	0	0	0	1.08E-232	***	0	0	
Malonyl-CoA	C00083	HK2-ASO1-MET-PER	0	0	NA	0	0	0	1.08E-232	***	0	0	
Met	C00073	Ctrl	1735.78723	109.397538	0.06302474	1617.19538	1757.40293	1832.7634	8.92E-08	***	1	0.06302474	
Met	C00073	HK2-ASO1	2236.43819	178.678148	0.07989407	NA	2110.09366	2362.78272	8.92E-08	***	1.28842876	0.10293782	
Met	C00073	DPI	2251.87348	196.848315	0.08741535	2122.8246	2154.35147	2478.44436	8.92E-08	***	1.29732114	0.11340579	
Met	C00073	MET	2507.38037	140.549686	0.05605439	2657.75665	2485.05474	2379.32972	8.92E-08	***	1.44452057	0.08097172	
Met	C00073	PER	2003.28003	35.3034555	0.01762283	2013.97584	2031.99873	1963.86551	8.92E-08	***	1.1541046	0.02033858	
Met	C00073	HK2-ASO1-DPI	3053.4426	181.059805	0.05929694	2957.29422	2940.7397	3262.29387	8.92E-08	***	1.7591111	0.10430991	
Met	C00073	HK2-ASO1-DPI-PER	1917.99718	218.572311	0.11395862	2083.65109	1670.2674	2000.07305	8.92E-08	***	1.10497251	0.12592114	
Met	C00073	HK2-ASO1-MET	1889.18725	219.456417	0.11616446	1840.3361	1698.27287	2128.95277	8.92E-08	***	1.08837489	0.12643048	
Met	C00073	HK2-ASO1-MET-PER	1482.16673	112.839242	0.07613127	1571.16849	1520.07767	1355.25402	8.92E-08	***	0.85388733	0.06500753	
NAD+	C00003	Ctrl	2.42435391	1.13323212	0.46743675	2.080233	3.68975815	1.50307058	4.84E-08	***	1	0.46743675	
NAD+	C00003	HK2-ASO1	7.19237684	1.16417914	0.16186292	7.64803782	5.86928709	8.05980562	4.84E-08	***	2.96671902	0.48020181	
NAD+	C00003	DPI	3.71645487	0.55381208	0.14901623	3.43337306	3.36140103	4.35459051	4.84E-08	***	1.53296713	0.22843698	
NAD+	C00003	MET	6.94416042	1.00003194	0.14401049	8.06762842	6.61357275	6.15128009	4.84E-08	***	2.86433445	0.41249421	
NAD+	C000												

Nicotinamide	C00153	Ctrl	731.720178	172.641984	0.2359399	535.515369	860.367787	799.277378	2.04E-05	***	1	0.2359399
Nicotinamide	C00153	HK2-ASO1	1137.09799	382.54103	0.3364187	1574.10565	974.324512	862.863817	2.04E-05	***	1.55400661	0.52279689
Nicotinamide	C00153	DPI	993.969103	276.100507	0.27777574	728.57865	973.669492	1279.65917	2.04E-05	***	1.35840057	0.37733073
Nicotinamide	C00153	MET	1109.00004	184.699118	0.16654564	1322.03003	993.685463	1011.28464	2.04E-05	***	1.51560675	0.25241769
Nicotinamide	C00153	PER	774.201453	49.4926535	0.06392736	772.818174	824.371246	725.414939	2.04E-05	***	1.05805672	0.06763877
Nicotinamide	C00153	HK2-ASO1-DPI	779.256277	219.985501	0.28230187	1029.15295	693.771369	614.844517	2.04E-05	***	1.06496486	0.30064157
Nicotinamide	C00153	HK2-ASO1-DPI-PER	205.846779	13.9796712	0.06791299	221.505559	194.621336	201.413443	2.04E-05	***	0.28131899	0.01910521
Nicotinamide	C00153	HK2-ASO1-MET	305.887804	105.423253	0.34464668	376.960503	184.761935	355.940973	2.04E-05	***	0.41803932	0.14407591
Nicotinamide	C00153	HK2-ASO1-MET-PER	207.769657	38.0606402	0.18318671	202.649971	248.131007	172.527992	2.04E-05	***	0.28394687	0.05201529
Ornithine	C00077	Ctrl	19.2711686	0.64949597	0.03370112	19.7916012	18.5433406	19.478564	0.4937267		1	0.03370112
Ornithine	C00077	HK2-ASO1	21.3038632	18.0084812	0.84531528	0.53662543	32.6076831	30.7672811	0.4937267		1.10547854	0.9344779
Ornithine	C00077	DPI	6.9396593	10.8648362	1.56561522	19.4852115	0.70569649	0.62806991	0.4937267		0.36010579	0.5637871
Ornithine	C00077	MET	27.3268142	5.21882532	0.19097818	31.0204469	21.3564138	29.603582	0.4937267		1.41801542	0.27081001
Ornithine	C00077	PER	19.1631845	0.60164069	0.03139565	19.8540989	18.8805728	18.7548819	0.4937267		0.9943966	0.03121973
Ornithine	C00077	HK2-ASO1-DPI	28.525803	23.8984131	0.83778231	1.83644911	47.9444357	35.7965243	0.4937267		1.48023214	1.24011229
Ornithine	C00077	HK2-ASO1-DPI-PER	24.5535091	2.91767209	0.11882913	25.4061673	21.3044967	26.9498633	0.4937267		1.27410587	0.15140087
Ornithine	C00077	HK2-ASO1-MET	27.1701952	11.322623	0.4167298	38.0484922	15.4502074	28.0118861	0.4937267		1.4098883	0.58754249
Ornithine	C00077	HK2-ASO1-MET-PER	23.3867921	6.72804353	0.28768561	18.2847284	31.0116075	20.8640404	0.4937267		1.21356377	0.34912483
Orotidine	X00006	Ctrl	90.3006999	3.84553746	0.04258591	91.1444387	93.6543089	86.1033522	4.92E-15	***	1	0.04258591
Orotidine	X00006	HK2-ASO1	56.9789619	4.23069471	0.07425012	NA	53.987409	59.9705148	4.92E-15	***	0.63099136	0.04685118
Orotidine	X00006	DPI	78.8334122	3.69779347	0.04690642	82.4935923	75.0991195	78.9075248	4.92E-15	***	0.87300998	0.04094978
Orotidine	X00006	MET	59.8105643	6.82771866	0.11415573	64.0547245	63.4424454	51.9345229	4.92E-15	***	0.66234884	0.07561092
Orotidine	X00006	PER	89.567866	7.32993662	0.08183668	86.8550946	97.8674948	83.9810086	4.92E-15	***	0.99188452	0.08117253
Orotidine	X00006	HK2-ASO1-DPI	32.9159475	1.72624409	0.052444	33.3946654	31.0008591	34.3522881	4.92E-15	***	0.36451487	0.01911662
Orotidine	X00006	HK2-ASO1-DPI-PER	15.1700952	2.17442866	0.14333652	17.6486066	13.5831674	14.2785116	4.92E-15	***	0.16799532	0.02407986
Orotidine	X00006	HK2-ASO1-MET	11.1653984	1.12610019	0.10085625	11.796314	11.8346035	9.86527787	4.92E-15	***	0.12364686	0.01247056
Orotidine	X00006	HK2-ASO1-MET-PER	9.41911682	1.74013761	0.1847453	10.9603885	9.76492177	7.53204018	4.92E-15	***	0.10430835	0.01927048
P-Choline	C00588	Ctrl	8102.57227	380.447538	0.04695392	7741.37076	8499.71501	8066.63105	2.68E-16	***	1	0.04695392
P-Choline	C00588	HK2-ASO1	6754.3757	638.656909	0.09455454	NA	6302.77706	7205.97433	2.68E-16	***	0.83360882	0.0788215
P-Choline	C00588	DPI	7876.09714	59.5040665	0.00755502	7808.33361	7900.13957	7919.81822	2.68E-16	***	0.97204898	0.00734385
P-Choline	C00588	MET	6400.68264	415.947406	0.06498485	6782.97	6461.3415	5957.73641	2.68E-16	***	0.78995687	0.05133523
P-Choline	C00588	PER	8552.76323	611.640912	0.07151384	8150.94294	9256.67432	8250.67244	2.68E-16	***	1.05556149	0.07548725
P-Choline	C00588	HK2-ASO1-DPI	3806.02684	62.5951401	0.01644632	3878.0258	3775.52856	3764.52615	2.68E-16	***	0.46973069	0.00772534
P-Choline	C00588	HK2-ASO1-DPI-PER	1282.66448	154.625278	0.12055006	1441.2916	1132.37871	1274.32311	2.68E-16	***	0.15830337	0.01908348
P-Choline	C00588	HK2-ASO1-MET	1317.0568	187.808925	0.14259744	1522.66495	1273.97005	1154.5354	2.68E-16	***	0.16254799	0.02317893
P-Choline	C00588	HK2-ASO1-MET-PER	798.471084	106.291312	0.13311855	886.510693	828.509455	680.393103	2.68E-16	***	0.09854538	0.01311822
P-Creatine	C02305	Ctrl	6.44397527	0.33768789	0.05240366	6.11407188	6.42891049	6.78894343	5.92E-14	***	1	0.05240366
P-Creatine	C02305	HK2-ASO1	4.27898217	0.34017328	0.07949864	NA	4.51952101	4.03844334	5.92E-14	***	0.66402834	0.05278935
P-Creatine	C02305	DPI	6.49993351	1.0410422	0.16016198	5.9822308	7.6392345	6.26234294	5.92E-14	***	1.00868381	0.16155279
P-Creatine	C02305	MET	4.82076954	0.48735301	0.10109444	4.67065065	4.42613633	5.36552164	5.92E-14	***	0.74810491	0.07562925
P-Creatine	C02305	PER	7.7757884	0.38878781	0.04999979	7.49037175	8.21859498	7.61839846	5.92E-14	***	1.20667571	0.06033353
P-Creatine	C02305	HK2-ASO1-DPI	1.76731267	0.37374667	0.21147739	1.79254724	1.38158818	2.12780259	5.92E-14	***	0.27425814	0.0579994
P-Creatine	C02305	HK2-ASO1-DPI-PER	0	0	NA	0	0	0	5.92E-14	***	0	0
P-Creatine	C02305	HK2-ASO1-MET	0	0	NA	0	0	0	5.92E-14	***	0	0
P-Creatine	C02305	HK2-ASO1-MET-PER	0	0	NA	0	0	0	5.92E-14	***	0	0
P-Eta	C00346	Ctrl	2.58432255	0.14765121	0.05713343	2.41416377	2.66016235	2.67864153	2.46E-16	***	1	0.05713343
P-Eta	C00346	HK2-ASO1	17.9152552	1.84655546	0.10302144	18.0191311	16.0198554	19.706779	2.46E-16	***	6.93228295	0.7141738
P-Eta	C00346	DPI	8.08309741	0.40452164	0.05004537	8.15091953	7.64895157	8.44942112	2.46E-16	***	3.12774325	0.15652908
P-Eta	C00346	MET	14.2438606	0.94950228	0.06666046	15.0957406	14.4156496	13.2201916	2.46E-16	***	5.51164195	0.36740858
P-Eta	C00346	PER	2.74644357	0.38298569	0.13944786	2.70304018	3.14928192	2.38700862	2.46E-16	***	1.0627325	0.14819578
P-Eta	C00346	HK2-ASO1-DPI	95.2609208	2.5340945	0.02660162	96.1356296	92.4053442	97.2417885	2.46E-16	***	36.8610802	0.98056433
P-Eta	C00346	HK2-ASO1-DPI-PER	105.404332	9.70293344	0.09205441	114.140636	94.9612594	107.111099	2.46E-16	***	40.7860589	3.75453654
P-Eta	C00346	HK2-ASO1-MET	118.776818	9.58650233	0.08071021	129.517107	115.727379	111.085968	2.46E-16	***	45.9605237	3.70948368
P-Eta	C00346	HK2-ASO1-MET-PER	92.8909554	10.6869865	0.11504873	103.212152	93.5895252	81.8718213	2.46E-16	***	35.9440254	4.13531451
P-Ser	C01005	Ctrl	0.93520403	0.90421119	0.9668598	1.95573254	0.61596085	0.23391871	0.50792981		1	0.9668598
P-Ser	C01005	HK2-ASO1	30.1368262	50.2581128	1.66766442	88.159963	2.05509512	0.19542032	0.50792981		32.2248676	53.7402652
P-Ser	C01005	DPI	2.99723752	1.78938058	0.59700994	4.65373274	3.23852276	1.09945705	0.50792981		3.20490225	1.91335849
P-Ser	C01005	MET	2.71854531	1.88932896	0.69497292	0.65156131	4.35639381	3.14768081	0.50792981		2.90690075	2.02023183
P-Ser	C01005	PER	1.3613041	1.84704838	1.35682276	0.32128988	0.26874632	3.4938761	0.50792981		1.45562257	1.97502182
P-Ser	C01005	HK2-ASO1-DPI	1.66868146	1.67018678	1.0009021	1.12087656	3.54397588	0.34119195	0.50792981		1.78429669	1.7859063
P-Ser	C01005	HK2-ASO1-DPI-PER	2.05836473	1.38912405	0.67486779	3.45642689	0.67835473	2.04031257	0.50792981		2.20097931	1.48537004
P-Ser	C01005	HK2-ASO1-MET	2.56696455	0.6701198	0.26105534	2.34406872	3.32012785	2.03669707	0.50792981		2.74481766	0.71654931
P-Ser	C01005	HK2-ASO1-MET-PER	1.40056082	0.85811042	0.61269058	2.87747421	0.57483057	1.33910468	0.50792981		1.49759921	0.91756493
Palmitate	C00249	Ctrl	866.87193	133.004522	0.15343042	1001.01694	735.038013	864.560842	0.11720535		1	0.15343042
Palmitate	C00249	HK2-ASO1	1063.97297	142.096279	0.13355253	NA	1164.45021	963.495728	0.11720535		1.22737043	1.16391842
Palmitate	C00249	DPI	1249.86842	399.5813	0.31969869	1617.18004	1308.03248	824.39275	0.11720535		1.44181439	0.46094617
Palmitate	C00249	MET	1543.28996	264.207532	0.1711976	1848.31497	1385.7348	1395.82011	0.11720535		1.78029753	0.30478266
Palmitate	C00249	PER	1574.75675	116.771455	0.07415206	1460.44041	1569.99234	1693.83748	0.11720535		1.81659677	1.13470439
Palmitate	C00249	HK2-ASO1-DPI	1587.07783	239.916156	0.15116849	1413.3333	1487.08279	1860.8174	0.11720535		1.83081004	0.27676079
Palmitate	C00249	HK2-ASO1-DPI-PER	1733.2609	506.201502	0.29205153	1350.94541	1541.51382	2307.32347	0.11720535		1.99944287	0.58394035
Palmitate	C00249	HK2-ASO1-MET	1495.37451	676.198474	0.45219339	1144.36577	2274.89794	1066.85982	0.11720535		1.72502356	0.78004426
Palmitate	C00249	HK2-ASO1-MET-PER	1809.68753	395.597789	0.21860005	2029.15088	1353.00559	2046.90613	0.11720535		2.08760656	0.4563509
Pantothenate	C00864	Ctrl	1165.23409	108.71811	0.09330152	1119.58987	1086.77896	1289.33345	1.52E-09	***	1	0.09330152
Pantothenate	C00864	HK2-ASO1	881.572074	205.914303	0.23357625	646.097715	970.768586	1027.84992	1.52E-09	***	0.7565622	0.17671497
Pantothenate	C00864	DPI	921.180754									

PEP	C00074	DPI	4.14803429	0.49460561	0.11923855	4.12582958	3.664905	4.6533683	0.00062432	***	0.7381434	0.08801515
PEP	C00074	MET	2.91182142	0.62896191	0.21600291	2.27646773	2.92480604	3.53419049	0.00062432	***	0.51815911	0.11192388
PEP	C00074	PER	4.7520386	0.28113232	0.05916036	5.0752936	4.56462281	4.6161994	0.00062432	***	0.84562606	0.05002754
PEP	C00074	HK2-ASO1-DPI	3.26754809	0.50004086	0.15303244	3.50802165	2.69270136	3.60192127	0.00062432	***	0.58146073	0.08898235
PEP	C00074	HK2-ASO1-DPI-PER	1.40845231	0.43921793	0.31184437	1.35572343	0.99797909	1.8716544	0.00062432	***	0.25063432	0.07715879
PEP	C00074	HK2-ASO1-MET	2.91913235	0.7278813	0.24934851	3.7089447	2.77314088	2.27531146	0.00062432	***	0.51946009	0.1295266
PEP	C00074	HK2-ASO1-MET-PER	3.29239895	0.65993844	0.20044303	2.78676403	4.03894583	3.051487	0.00062432	***	0.58588294	0.11743616
Phe	C00079	Ctrl	3308.42986	223.562906	0.06757372	3129.154	3237.20917	3558.92642	8.74E-08	***	1	0.06757372
Phe	C00079	HK2-ASO1	3980.27277	480.561103	0.12073572	NA	3640.46475	4320.08078	8.74E-08	***	1.20307002	0.14525353
Phe	C00079	DPI	4299.46996	323.019673	0.07513012	4241.53024	4009.34117	4647.53848	8.74E-08	***	1.29954998	0.09763534
Phe	C00079	MET	4448.69612	197.131261	0.04431214	4613.98237	4501.59293	4230.51305	8.74E-08	***	1.34465481	0.05958454
Phe	C00079	PER	3951.37709	54.1346283	0.01370019	3905.90905	4011.26015	3936.96206	8.74E-08	***	1.19433606	0.01636263
Phe	C00079	HK2-ASO1-DPI	5592.20426	556.881697	0.09958179	5158.95589	5397.32011	6220.33678	8.74E-08	***	1.6902895	0.16832205
Phe	C00079	HK2-ASO1-DPI-PER	3560.46293	404.135201	0.11350636	3951.8835	3144.71239	3584.79291	8.74E-08	***	1.07617906	0.12215317
Phe	C00079	HK2-ASO1-MET	3202.73386	55.7627363	0.01741098	3209.85368	3143.75317	3254.59475	8.74E-08	***	0.96805252	0.01685474
Phe	C00079	HK2-ASO1-MET-PER	2525.37391	189.102357	0.07488093	2687.07955	2571.59652	2317.44566	8.74E-08	***	0.76331493	0.05715774
Pipicolate	C00408	Ctrl	15.3035563	0.30723464	0.02007603	15.089215	15.6555463	15.1659077	0.00023202	***	1	0.02007603
Pipicolate	C00408	HK2-ASO1	24.7822405	0.21812712	0.00880175	NA	24.9364797	24.6280014	0.00023202	***	1.61937788	0.01425336
Pipicolate	C00408	DPI	24.9444827	6.00270901	0.24064275	18.0345104	28.8703483	27.9285893	0.00023202	***	1.62997947	0.39224275
Pipicolate	C00408	MET	24.1970828	4.18035785	0.17276289	27.6621132	19.5541441	25.3749912	0.00023202	***	1.58114116	0.27316251
Pipicolate	C00408	PER	17.3677109	0.92397637	0.05320081	18.0023766	16.3076588	17.7930974	0.00023202	***	1.13488071	0.06037658
Pipicolate	C00408	HK2-ASO1-DPI	42.0977796	5.95275927	0.14140316	47.7096617	42.7291962	35.8544809	0.00023202	***	2.75084945	0.38897822
Pipicolate	C00408	HK2-ASO1-DPI-PER	29.070004	1.83904773	0.06326273	28.7944646	27.3842729	31.0312744	0.00023202	***	1.89955873	0.12017127
Pipicolate	C00408	HK2-ASO1-MET	31.8022646	9.93923641	0.31252335	42.5277008	22.9022953	29.9767947	0.00023202	***	2.07809635	0.64947233
Pipicolate	C00408	HK2-ASO1-MET-PER	25.7685139	3.81456063	0.14803184	27.7889607	30.0676623	24.4489187	0.00023202	***	1.6838252	0.24925755
PO4	C00009	Ctrl	85.7166227	6.16394335	0.07191071	78.6865966	88.2681795	90.1950919	0.00072549	***	1	0.07191071
PO4	C00009	HK2-ASO1	154.624206	44.0036095	0.28458422	204.634095	137.402315	121.836208	0.00072549	***	1.80389989	0.51336145
PO4	C00009	DPI	140.113613	29.3988293	0.20982136	106.567003	152.385821	161.388015	0.00072549	***	1.63461425	0.34297699
PO4	C00009	MET	140.463117	20.9213218	0.1489453	161.765527	119.944936	139.678889	0.00072549	***	1.63869169	0.24407543
PO4	C00009	PER	88.6443445	6.31134349	0.07119849	95.1615957	82.5613368	88.2101011	0.00072549	***	1.03415582	0.07363033
PO4	C00009	HK2-ASO1-DPI	204.140971	17.0984957	0.08375828	215.591884	212.344477	184.486552	0.00072549	***	2.38157973	0.19947701
PO4	C00009	HK2-ASO1-DPI-PER	178.988876	22.8425462	0.12761992	195.907952	153.005338	188.053337	0.00072549	***	2.08814662	0.26648911
PO4	C00009	HK2-ASO1-MET	208.508245	63.1648968	0.30293717	244.271368	135.576221	245.677146	0.00072549	***	2.43252987	0.73690371
PO4	C00009	HK2-ASO1-MET-PER	181.187087	28.8896727	0.15944664	164.047779	214.541742	164.971741	0.00072549	***	2.11379172	0.33703699
PPi	C00013	Ctrl	45.2611911	6.90459969	0.15255011	44.6226308	38.6980533	52.4628893	2.65E-09	***	1	0.15255011
PPi	C00013	HK2-ASO1	40.7431328	7.62681898	0.18719275	NA	46.1361082	35.3501574	2.65E-09	***	0.9001781	0.16850681
PPi	C00013	DPI	61.9852213	7.44574491	0.12012129	54.6213873	61.8240174	69.5102592	2.65E-09	***	1.36950044	0.16450616
PPi	C00013	MET	52.637419	2.95149089	0.0560721	51.0878519	56.0409722	50.7834329	2.65E-09	***	1.16297026	0.06521019
PPi	C00013	PER	54.2092145	10.1083345	0.18646893	65.3262051	51.730949	45.5704894	2.65E-09	***	1.19769748	0.22333337
PPi	C00013	HK2-ASO1-DPI	39.5429634	3.13608456	0.07930828	36.0138472	42.0103947	40.6046482	2.65E-09	***	0.87366157	0.0692886
PPi	C00013	HK2-ASO1-DPI-PER	10.708631	2.86164291	0.26722771	13.5824602	7.85933208	10.6841008	2.65E-09	***	0.23659632	0.06322509
PPi	C00013	HK2-ASO1-MET	6.47352362	0.44671179	0.06900597	NA	6.78939656	6.15765069	2.65E-09	***	0.14302592	0.00986934
PPi	C00013	HK2-ASO1-MET-PER	3.70991282	0.42437636	0.11438985	4.14807259	3.68085217	3.30081371	2.65E-09	***	0.08196675	0.00937616
Pro	C00148	Ctrl	6836.31139	442.715086	0.06475935	6362.03117	6908.25358	7238.64942	3.63E-13	***	1	0.06475935
Pro	C00148	HK2-ASO1	8245.07731	536.731543	0.06509721	8765.24188	7653.18625	8276.80379	3.63E-13	***	1.20607106	0.07851186
Pro	C00148	DPI	10276.6062	716.581224	0.06972936	9540.18969	10318.0781	10971.5509	3.63E-13	***	1.50323846	0.10481986
Pro	C00148	MET	8893.79818	362.645702	0.04077512	9309.25326	8731.45466	8640.68662	3.63E-13	***	1.30096446	0.05304698
Pro	C00148	PER	7867.83997	443.779132	0.05640419	7356.18473	8148.09319	8099.24198	3.63E-13	***	1.15088964	0.064915
Pro	C00148	HK2-ASO1-DPI	8583.90313	122.314743	0.01424932	8711.61467	8467.81501	8572.2797	3.63E-13	***	1.25563372	0.01789192
Pro	C00148	HK2-ASO1-DPI-PER	4179.44383	461.994251	0.11053965	4588.87552	3678.56425	4270.89173	3.63E-13	***	0.61133949	0.06757946
Pro	C00148	HK2-ASO1-MET	3713.45458	599.790273	0.16151814	4303.36753	3104.25233	3732.74386	3.63E-13	***	0.54319565	0.08773595
Pro	C00148	HK2-ASO1-MET-PER	2817.61723	165.013088	0.05856476	2836.97084	2972.1001	2643.78076	3.63E-13	***	0.41215461	0.02413774
Pro-OH	C01157	Ctrl	2551.64453	82.326412	0.03226606	2466.55143	2630.89274	2557.48941	5.28E-08	***	1	0.03226606
Pro-OH	C01157	HK2-ASO1	2871.99256	224.500862	0.07816903	3121.59448	2686.57149	2807.81171	5.28E-08	***	1.12554571	0.08798281
Pro-OH	C01157	DPI	3174.84767	470.647371	0.1482425	2666.27508	3263.2292	3595.03873	5.28E-08	***	1.24423588	0.18444864
Pro-OH	C01157	MET	3207.40219	322.837581	0.10065391	3551.09813	2910.5385	3160.56995	5.28E-08	***	1.25699413	0.12652138
Pro-OH	C01157	PER	2689.25912	88.370823	0.03286066	2648.81081	2790.61498	2628.35157	5.28E-08	***	1.05393173	0.03463289
Pro-OH	C01157	HK2-ASO1-DPI	3007.58011	181.14493	0.06022946	3175.26372	3032.02101	2815.45561	5.28E-08	***	1.17868303	0.07099144
Pro-OH	C01157	HK2-ASO1-DPI-PER	1550.25816	172.955978	0.11156592	1684.68272	1355.13459	1610.95717	5.28E-08	***	0.60755256	0.06778216
Pro-OH	C01157	HK2-ASO1-MET	1758.5226	368.56336	0.20958693	1961.4583	1333.09214	1981.01737	5.28E-08	***	0.68917225	0.1444415
Pro-OH	C01157	HK2-ASO1-MET-PER	1333.45835	121.511119	0.0911248	1288.88337	1470.96196	1240.52971	5.28E-08	***	0.52258782	0.04762071
Propanoyl-CoA	C00100	Ctrl	0.03879539	0.00856759	0.22084049	0.02996654	0.04707533	0.03934431	6.53E-05	***	1	0.22084049
Propanoyl-CoA	C00100	HK2-ASO1	0.037961	0.01137935	0.29976436	0.03813379	0.02649624	0.04925298	6.53E-05	***	0.97849244	0.29331716
Propanoyl-CoA	C00100	DPI	0.01864985	0.00551614	0.2957741	0.02010931	0.02328951	0.01255073	6.53E-05	***	0.48072327	0.14218549
Propanoyl-CoA	C00100	MET	0.01598956	0.00081945	0.50154308	0.02482931	0.00918102	0.01395834	6.53E-05	***	0.41215094	0.20671145
Propanoyl-CoA	C00100	PER	0.03359739	0.02423151	0.72123196	0.03182942	0.05866446	0.01029828	6.53E-05	***	0.86601488	0.62459761
Propanoyl-CoA	C00100	HK2-ASO1-DPI	0	0	NA	0	0	0	6.53E-05	***	0	0
Propanoyl-CoA	C00100	HK2-ASO1-DPI-PER	0	0	NA	0	0	0	6.53E-05	***	0	0
Propanoyl-CoA	C00100	HK2-ASO1-MET	0	0	NA	0	0	0	6.53E-05	***	0	0
Propanoyl-CoA	C00100	HK2-ASO1-MET-PER	0	0	NA	0	0	0	6.53E-05	***	0	0
PRPP	C00119	Ctrl	9.46154237	0.11701222	0.01236714	9.33045078	9.49874902	9.5554273	6.29E-12	***	1	0.01236714
PRPP	C00119	HK2-ASO1	3.74210048	0.46186871	0.12342499	3.24615391	4.15992798	3.82021955	6.29E-12	***	0.39550639	0.04881537
PRPP	C00119	DPI	12.5879502	1.8201772	0.14459679	14.5889446	12.1444822	11.0306217	6.29E-12	***	1.33043321	0.19237637
PRPP	C00119	MET	7.30699269	1.72556061	0.23615195	6.96199416	5.77999455	5.77999455	6.29E-12	***	0.77228346	0.18237625
PRPP	C00119	PER	6.74537463	0.53766								

Pyr	C00022	PER	5.13413202	8.64387889	1.68361056	15.1148719	0.21632513	0.071199	0.2964507	0.93054294	1.56667191
Pyr	C00022	HK2-ASO1-DPI	0.27933549	0.15815497	0.56618286	0.34351994	0.39530832	0.09917821	0.2964507	0.05062855	0.02866502
Pyr	C00022	HK2-ASO1-DPI-PER	11.2566077	9.77509313	0.86838712	0.28499332	14.4467224	19.0381074	0.2964507	2.0402196	1.77170042
Pyr	C00022	HK2-ASO1-MET	0.34215153	0.15337695	0.44827199	0.19626503	0.328141	0.50205305	0.2964507	0.06201373	0.02779902
Pyr	C00022	HK2-ASO1-MET-PER	10.1344484	14.054914	1.38684548	20.0727734	0.19612341	NA	0.2964507	1.83683227	2.54740253
R5P	C00117	Ctrl	3.33423631	0.24180541	0.07252198	3.08919908	3.57267484	3.34083501	7.49E-11 ***	1	0.07252198
R5P	C00117	HK2-ASO1	2.15984865	0.09962206	0.04612455	2.04714595	2.19624678	2.23615321	7.49E-11 ***	0.64777912	0.02987852
R5P	C00117	DPI	4.49475721	0.38069497	0.08469756	4.91987479	4.18532248	4.37907435	7.49E-11 ***	1.34806198	0.11417756
R5P	C00117	MET	2.99823692	0.89289912	0.29780806	4.02926226	2.47974126	2.48570726	7.49E-11 ***	0.89922748	0.26779719
R5P	C00117	PER	5.50475424	0.53174115	0.09659671	5.7896818	5.83331154	4.89126937	7.49E-11 ***	1.65097903	0.15947914
R5P	C00117	HK2-ASO1-DPI	2.818413	0.73134259	0.25948737	2.35167834	2.44228789	3.66127278	7.49E-11 ***	0.84529492	0.21934336
R5P	C00117	HK2-ASO1-DPI-PER	0.32697397	0.05993835	0.18331229	0.28484526	0.30048325	0.39559339	7.49E-11 ***	0.09806562	0.01797663
R5P	C00117	HK2-ASO1-MET	0.21175034	0.09697215	0.45795512	0.21529152	0.3069034	0.11305611	7.49E-11 ***	0.0635079	0.02908377
R5P	C00117	HK2-ASO1-MET-PER	0.3727733	0.1698928	0.45575366	0.56211489	0.32255343	0.23365159	7.49E-11 ***	0.1118017	0.05095404
Rib	C00121	Ctrl	19.6378673	3.86260395	0.19669162	17.2790289	17.5390827	24.0954903	0.00072689 ***	1	0.19669162
Rib	C00121	HK2-ASO1	31.514883	27.2313585	0.86407931	0.44547727	51.2407557	42.8584161	0.00072689 ***	1.60480171	1.38667596
Rib	C00121	DPI	14.5029057	5.33404636	0.36779156	10.5558099	12.3816561	20.5712521	0.00072689 ***	0.73851735	0.27162405
Rib	C00121	MET	13.5188281	2.4418458	0.18062555	14.0913089	10.8416025	15.6235728	0.00072689 ***	0.68840612	0.12434374
Rib	C00121	PER	25.0787036	6.20085357	0.24725575	31.8725011	19.7237903	23.6398192	0.00072689 ***	1.27705841	0.31576003
Rib	C00121	HK2-ASO1-DPI	65.0369839	11.9423127	0.18362341	51.9275944	67.8867139	75.2966433	0.00072689 ***	3.31181502	0.60812676
Rib	C00121	HK2-ASO1-DPI-PER	40.4305358	8.97351814	0.22194903	47.9805171	30.5096225	42.8014677	0.00072689 ***	2.05880481	0.45694973
Rib	C00121	HK2-ASO1-MET	50.8618353	16.6624578	0.32760237	39.9976133	42.5420733	70.0458192	0.00072689 ***	2.59898772	0.84848612
Rib	C00121	HK2-ASO1-MET-PER	43.9449605	6.66041762	0.15156272	39.6397421	51.6166261	40.5785132	0.00072689 ***	2.23776644	0.31861696
S7P	C05382	Ctrl	3.03355457	0.27457824	0.0905137	3.22659596	2.71921634	3.1548514	1.26E-20 ***	1	0.0905137
S7P	C05382	HK2-ASO1	0	0	NA	0	0	0	1.26E-20 ***	0	0
S7P	C05382	DPI	7.92016122	0.33284223	0.04202468	7.54648567	8.18483784	8.02916016	1.26E-20 ***	2.61085174	0.10972021
S7P	C05382	MET	6.62417071	0.41911616	0.06327074	6.65225404	6.19171913	7.02853895	1.26E-20 ***	2.18363328	0.13816009
S7P	C05382	PER	3.09335918	0.1860724	0.06015221	2.89521401	3.26438179	3.12048175	1.26E-20 ***	1.01971437	0.06133807
S7P	C05382	HK2-ASO1-DPI	0	0	NA	0	0	0	1.26E-20 ***	0	0
S7P	C05382	HK2-ASO1-DPI-PER	0	0	NA	0	0	0	1.26E-20 ***	0	0
S7P	C05382	HK2-ASO1-MET	0	0	NA	0	0	0	1.26E-20 ***	0	0
S7P	C05382	HK2-ASO1-MET-PER	0	0	NA	0	0	0	1.26E-20 ***	0	0
SAM	C00019	Ctrl	186.553254	9.20241783	0.04932864	183.5784	196.875113	179.206251	1.40E-08 ***	1	0.04932864
SAM	C00019	HK2-ASO1	203.032894	24.2000934	0.11919297	187.606525	190.567752	230.924406	1.40E-08 ***	1.08833746	0.12972217
SAM	C00019	DPI	210.091369	9.95409442	0.04737984	208.713843	200.897783	220.662481	1.40E-08 ***	1.1261737	0.05335792
SAM	C00019	MET	205.428348	22.2064777	0.10809841	226.654701	207.273467	182.356876	1.40E-08 ***	1.10117804	0.1190356
SAM	C00019	PER	197.987615	14.3680764	0.07257058	200.367407	211.017216	182.578224	1.40E-08 ***	1.06129274	0.07701863
SAM	C00019	HK2-ASO1-DPI	351.001014	19.4302048	0.05535655	373.047309	336.371831	343.583901	1.40E-08 ***	1.88150571	0.10415366
SAM	C00019	HK2-ASO1-DPI-PER	347.995648	32.735126	0.09406763	384.731824	321.918573	337.336546	1.40E-08 ***	1.86539575	0.17547336
SAM	C00019	HK2-ASO1-MET	281.167118	27.5447148	0.09796561	312.965525	264.667793	265.868222	1.40E-08 ***	1.50716845	0.14765068
SAM	C00019	HK2-ASO1-MET-PER	185.513028	28.4920843	0.15358535	213.312349	186.851386	156.37535	1.40E-08 ***	0.99442397	0.15272896
Sarc	C00213	Ctrl	221.460733	22.8929072	0.10337231	195.684716	229.271058	239.426427	1.96E-13 ***	1	0.10337231
Sarc	C00213	HK2-ASO1	149.152254	13.7874011	0.09243844	164.803886	143.848785	138.804091	1.96E-13 ***	0.673493	0.06225664
Sarc	C00213	DPI	234.605164	31.0641059	0.13241015	198.751162	253.46532	251.598552	1.96E-13 ***	1.05935332	0.14026914
Sarc	C00213	MET	169.482507	20.8025472	0.12274156	193.503119	157.411834	157.53257	1.96E-13 ***	0.76529371	0.09393334
Sarc	C00213	PER	217.541712	13.731025	0.06311904	227.516278	223.227858	201.881001	1.96E-13 ***	0.98230377	0.06200207
Sarc	C00213	HK2-ASO1-DPI	70.4072652	6.67784099	0.09484591	77.6465648	69.0871731	64.4880576	1.96E-13 ***	0.31792212	0.03015361
Sarc	C00213	HK2-ASO1-DPI-PER	15.5141264	1.46603771	0.09449696	16.2089916	12.3829549	16.503533	1.96E-13 ***	0.07005362	0.00661985
Sarc	C00213	HK2-ASO1-MET	17.1196291	4.22747356	0.24693722	21.1420964	17.5034635	12.7133276	1.96E-13 ***	0.07730323	0.01908904
Sarc	C00213	HK2-ASO1-MET-PER	10.5611866	0.92878197	0.08794296	9.63893791	11.4963668	10.548255	1.96E-13 ***	0.04768875	0.00419389
Ser	C00065	Ctrl	15.0386123	1.09533413	0.07283479	14.4347469	16.3029725	14.3781175	0.00071011 ***	1	0.07283479
Ser	C00065	HK2-ASO1	20.1205589	13.8321424	0.68746313	36.0812555	12.6601017	11.6203194	0.00071011 ***	1.33792657	0.91977519
Ser	C00065	DPI	33.8267104	7.58727652	0.22429839	25.079881	37.7682724	38.6319777	0.00071011 ***	2.24932392	0.50451972
Ser	C00065	MET	42.7320489	6.51597187	0.15248442	46.1761825	35.2167665	46.8031977	0.00071011 ***	2.84148883	0.43382729
Ser	C00065	PER	16.6352503	0.26172789	0.01573333	16.9369158	16.5002273	16.4686079	0.00071011 ***	1.10616924	0.01740373
Ser	C00065	HK2-ASO1-DPI	21.1915988	2.17630099	0.1026964	23.4204399	21.0824077	19.0719487	0.00071011 ***	1.40914589	0.14471422
Ser	C00065	HK2-ASO1-DPI-PER	17.2546052	1.85251791	0.10736368	17.1456368	15.458966	19.1591932	0.00071011 ***	1.14735355	0.1231841
Ser	C00065	HK2-ASO1-MET	23.3935315	8.54518794	0.36527995	30.7827881	14.0359179	25.3618884	0.00071011 ***	1.5555645	0.56821652
Ser	C00065	HK2-ASO1-MET-PER	16.8433807	2.98461963	0.17719837	14.1543747	20.0546695	16.321098	0.00071011 ***	1.12000897	0.19846377
Sorbitol	C00794	Ctrl	63.6966688	10.8235632	0.16992354	72.8531503	66.4851543	51.7517019	1.18E-12 ***	1	0.16992354
Sorbitol	C00794	HK2-ASO1	341.467308	63.1809632	0.18502785	272.125472	356.501107	395.775346	1.18E-12 ***	5.36083463	0.99190373
Sorbitol	C00794	DPI	80.4377544	6.88971261	0.08565272	80.574963	73.4804623	87.257838	1.18E-12 ***	1.26282153	0.10816441
Sorbitol	C00794	MET	73.1365736	7.06782722	0.09663875	80.4392836	66.3297469	72.6406903	1.18E-12 ***	1.14820092	0.1109607
Sorbitol	C00794	PER	68.2699912	4.67269425	0.06844434	72.9711303	68.2125724	63.6262709	1.18E-12 ***	1.07179845	0.07335853
Sorbitol	C00794	HK2-ASO1-DPI	523.825659	16.3582523	0.03122843	520.895529	509.130489	541.450958	1.18E-12 ***	8.2237528	0.25681488
Sorbitol	C00794	HK2-ASO1-DPI-PER	405.623452	18.0220633	0.04443053	424.05315	388.03875	404.778455	1.18E-12 ***	6.36804811	0.28293573
Sorbitol	C00794	HK2-ASO1-MET	335.835132	63.2718501	0.18840152	407.553804	287.907198	312.044394	1.18E-12 ***	5.27241279	0.9933306
Sorbitol	C00794	HK2-ASO1-MET-PER	354.376026	37.448153	0.10567349	372.844661	379.002398	311.281019	1.18E-12 ***	5.56349386	0.58791384
Succ	C00042	Ctrl	79.5953361	12.9317107	0.1624682	93.876034	76.2332659	68.6767082	4.47E-05 ***	1	0.1624682
Succ	C00042	HK2-ASO1	86.4919248	18.0807462	0.20904548	69.1996577	105.26952	85.006597	4.47E-05 ***	1.08664564	0.22715836
Succ	C00042	DPI	70.3838214	3.11067774	0.04419592	68.0477925	69.1888837	73.914788	4.47E-05 ***	0.88427067	0.03908116
Succ	C00042	MET	55.6644914	2.66301637	0.04784049	52.7939449	58.0545569	56.1449724	4.47E-05 ***	0.69934363	0.03345694
Succ	C00042	PER	102.709397	5.0607609	0.04927262	108.551108	99.9193449	99.657738	4.47E-05 ***	1.29039467	0.06358112
Succ	C00042	HK2-ASO1-DPI	112.256575	7.36506521	0.06560921	113.663189	118.816894	104.289642	4.47E-05 ***	1.41034111	0.09253137
Succ	C00042	HK2-ASO1-DPI-PER	90.0012785	8.95683094	0.09951893	82.0664993	88.223733	99.7136032	4.47E-05 ***	1.13073558	0.1125296
Succ	C00042	HK2-ASO1-MET	99.8113431	4.64420586	0.04652984	100.347058	94.9225111	104.16446	4.47E-05 ***	1.25398482	0.05834771
Succ	C00042	HK2-ASO1-MET-PER	108.052099	17.1133413	0.15838046	89.7982636	123.733753	110.624279	4.47E-05 ***	1.35751797	0.21500432
Thr	C00188	Ctrl	684.62046	41.3429055	0.						

Thr	C00188	HK2-ASO1-DPI-PER	556.531202	54.3484568	0.09765572	589.142957	493.791395	586.659255	6.28E-08	***	0.81290472	0.0793848
Thr	C00188	HK2-ASO1-MET	594.497453	81.7662785	0.13753848	623.227606	502.243623	658.021131	6.28E-08	***	0.86836063	0.119433
Thr	C00188	HK2-ASO1-MET-PER	461.080063	32.9482318	0.07145881	445.491983	498.929797	438.818408	6.28E-08	***	0.67348274	0.04812627
Trp	C00078	Ctrl	766.205494	30.3307272	0.03958563	731.741736	778.009546	788.859575	2.49E-06	***	1	0.03958563
Trp	C00078	HK2-ASO1	836.940717	133.271776	0.15923682	694.994726	856.436842	959.390582	2.49E-06	***	1.09231887	0.17393738
Trp	C00078	DPI	1000.33902	80.7232177	0.08069586	973.801567	936.225184	1090.9903	2.49E-06	***	1.30557537	0.10535453
Trp	C00078	MET	1136.12325	80.214676	0.07060385	1200.76504	1161.2521	1046.35261	2.49E-06	***	1.48279184	0.10469081
Trp	C00078	PER	892.6679	19.369828	0.02169881	891.45995	912.613434	873.930317	2.49E-06	***	1.16505025	0.0252802
Trp	C00078	HK2-ASO1-DPI	1301.28802	97.6163906	0.07501521	1236.12965	1254.21325	1413.52114	2.49E-06	***	1.69835381	0.12740236
Trp	C00078	HK2-ASO1-DPI-PER	908.798199	108.22778	0.1190889	1008.49685	793.692559	924.205186	2.49E-06	***	1.18610243	0.14125164
Trp	C00078	HK2-ASO1-MET	877.542958	83.7332472	0.09541783	829.420107	828.979318	974.229449	2.49E-06	***	1.14531019	0.10928302
Trp	C00078	HK2-ASO1-MET-PER	714.91553	64.9012677	0.09078173	781.003967	712.472186	651.270439	2.49E-06	***	0.93305978	0.08470478
Tyr	C00082	Ctrl	1329.25951	96.6258461	0.07269148	1241.19858	1313.95609	1432.62385	2.11E-07	***	1	0.07269148
Tyr	C00082	HK2-ASO1	1737.38395	119.476267	0.06876791	NA	1652.90148	1821.86643	2.11E-07	***	1.30703173	0.08988182
Tyr	C00082	DPI	1744.87374	170.100247	0.09748571	1601.77899	1699.90068	1932.94156	2.11E-07	***	1.31266599	0.12796617
Tyr	C00082	MET	1909.63585	124.066409	0.06496862	2052.58387	1846.33928	1829.98439	2.11E-07	***	1.43661628	0.09333498
Tyr	C00082	PER	1547.14438	15.586398	0.0100743	1555.38086	1556.88457	1529.16771	2.11E-07	***	1.16391447	0.01172562
Tyr	C00082	HK2-ASO1-DPI	2270.68525	71.2807158	0.03139172	2216.2131	2244.48417	2351.35848	2.11E-07	***	1.70823322	0.05362438
Tyr	C00082	HK2-ASO1-DPI-PER	1508.11047	151.910648	0.10072913	1631.26895	1338.36082	1554.70162	2.11E-07	***	1.13454932	0.11428216
Tyr	C00082	HK2-ASO1-MET	1511.78083	188.34428	0.12458438	1505.99259	1326.3974	1702.95252	2.11E-07	***	1.13731053	0.11469113
Tyr	C00082	HK2-ASO1-MET-PER	1141.62535	81.5558565	0.07143837	1191.3348	1186.03885	1047.50241	2.11E-07	***	0.8588431	0.06135435
Tyramine	C00483	Ctrl	13.537646	2.36455982	0.17466551	13.6188188	15.8605743	11.133545	0.00097284	***	1	0.17466551
Tyramine	C00483	HK2-ASO1	13.5424121	3.82701237	0.28259459	17.8782593	10.6353387	12.1136377	0.00097284	***	1.00035206	0.28269408
Tyramine	C00483	DPI	7.37930793	0.6436345	0.27975028	5.3982131	7.22179442	9.51791628	0.00097284	***	0.54509535	0.15249058
Tyramine	C00483	MET	9.31782022	2.06971361	0.07481751	9.23336547	8.66675885	10.0533363	0.00097284	***	0.68828955	0.05149611
Tyramine	C00483	PER	4.1583457	1.21464749	0.29209873	3.47717978	3.43714796	5.56070936	0.00097284	***	0.30716904	0.08972369
Tyramine	C00483	HK2-ASO1-DPI	20.65642697	1.57951911	0.59460287	4.31376133	2.48716311	1.16835648	0.00097284	***	0.19622518	0.11667605
Tyramine	C00483	HK2-ASO1-DPI-PER	10.7650909	1.14425556	0.10629316	10.3421205	12.0606161	9.89253604	0.00097284	***	0.79519666	0.08452397
Tyramine	C00483	HK2-ASO1-MET	14.4331081	7.30097168	0.50584889	11.1547067	9.34599854	22.7986192	0.00097284	***	1.06614607	0.5393088
Tyramine	C00483	HK2-ASO1-MET-PER	11.947042	0.5576178	0.04667413	11.4552531	12.5528606	11.8330122	0.00097284	***	0.88250512	0.04119016
UDP	C00015	Ctrl	98.1277738	6.86714532	0.06998167	91.5436306	97.593035	105.246656	2.86E-13	***	1	0.06998167
UDP	C00015	HK2-ASO1	134.163647	16.8801647	0.12581772	153.459054	122.127343	126.904544	2.86E-13	***	1.36723419	0.17202229
UDP	C00015	DPI	127.261965	12.8228556	0.10075953	114.514459	127.112572	140.158864	2.86E-13	***	1.29690056	0.13067509
UDP	C00015	MET	120.424228	13.8665517	0.11514752	135.002961	118.868688	107.401044	2.86E-13	***	1.22721859	0.14131118
UDP	C00015	PER	103.046397	1.63725057	0.01588848	101.439472	102.987344	104.712375	2.86E-13	***	1.05012468	0.01668488
UDP	C00015	HK2-ASO1-DPI	65.1839279	6.13726843	0.09415309	72.2316577	61.0172628	62.3028631	2.86E-13	***	0.66427603	0.06254364
UDP	C00015	HK2-ASO1-DPI-PER	16.6291458	1.67146561	0.10051422	17.5966633	14.6991056	17.5916984	2.86E-13	***	0.16946421	0.01703356
UDP	C00015	HK2-ASO1-MET	13.5307205	1.6793599	0.12411453	15.1685756	13.610859	11.812727	2.86E-13	***	0.1378888	0.017114
UDP	C00015	HK2-ASO1-MET-PER	7.40535109	0.61968618	0.08368086	8.00631466	6.76850188	7.44123674	2.86E-13	***	0.07546641	0.00631509
UDP-Glc	C00029	Ctrl	4.71448349	4.470885	0.94832976	2.2949356	1.97480763	9.87370723	2.77E-19	***	1	0.94832976
UDP-Glc	C00029	HK2-ASO1	71.5707584	1.11781188	0.01561828	72.5702137	70.3636976	71.7783638	2.77E-19	***	15.1810391	0.23710166
UDP-Glc	C00029	DPI	53.2429987	3.06099369	0.05749101	50.1837394	56.3057239	53.239533	2.77E-19	***	11.2934956	0.64927445
UDP-Glc	C00029	MET	47.3461974	3.42579047	0.07235619	50.7278708	47.4327897	43.8779316	2.77E-19	***	10.0427115	0.72665234
UDP-Glc	C00029	PER	55.3838966	1.39700096	0.02522396	55.004073	56.9315315	54.2160852	2.77E-19	***	11.7476064	0.2963211
UDP-Glc	C00029	HK2-ASO1-DPI	23.2490288	0.99202379	0.04262697	23.7338988	23.9053635	22.1078241	2.77E-19	***	4.93140529	0.21042046
UDP-Glc	C00029	HK2-ASO1-DPI-PER	1.21970427	0.66638183	0.54634705	1.9437029	1.08339109	0.63201883	2.77E-19	***	0.2587143	0.14134779
UDP-Glc	C00029	HK2-ASO1-MET	1.11207223	0.68183323	0.61311955	1.57627752	1.43067972	0.32925946	2.77E-19	***	0.23588421	0.14462522
UDP-Glc	C00029	HK2-ASO1-MET-PER	0.2334393	0.19337529	0.82837507	0.45671936	0.11992466	0.12367388	2.77E-19	***	0.04951535	0.04101178
UDP-GlcNac	C00043	Ctrl	9.59141558	1.02673649	0.10704744	9.70752769	10.55516	8.51155901	2.40E-13	***	1	0.10704744
UDP-GlcNac	C00043	HK2-ASO1	9.40245703	0.17651444	0.01877323	NA	9.27764247	9.52727159	2.40E-13	***	0.9802992	0.01840338
UDP-GlcNac	C00043	DPI	9.96005077	1.4331466	0.14388949	10.8926366	10.6776591	8.30985671	2.40E-13	***	1.03843387	0.14941972
UDP-GlcNac	C00043	MET	16.8431896	1.64332289	0.09756602	18.1419648	17.3918827	14.9957213	2.40E-13	***	1.75606921	0.17133267
UDP-GlcNac	C00043	PER	8.78564999	0.08451465	0.00961962	8.88068076	8.7189099	8.7573593	2.40E-13	***	0.91599096	0.00881149
UDP-GlcNac	C00043	HK2-ASO1-DPI	33.3852649	1.59642332	0.0478182	34.8352296	31.674499	33.6460661	2.40E-13	***	3.48074428	0.16644293
UDP-GlcNac	C00043	HK2-ASO1-DPI-PER	88.3346297	6.44121565	0.07291835	94.7692403	81.8868293	88.3478194	2.40E-13	***	9.20975939	0.67156048
UDP-GlcNac	C00043	HK2-ASO1-MET	88.782263	10.1993437	0.11488042	100.345051	84.9381526	81.0635858	2.40E-13	***	9.25642959	1.06338252
UDP-GlcNac	C00043	HK2-ASO1-MET-PER	87.9293885	12.0363312	0.13688633	98.4291795	90.50654971	74.7934889	2.40E-13	***	9.16750898	1.25490665
UMP	C00105	Ctrl	13.1710402	1.8000985	0.13667094	11.4279177	13.0620415	15.0231612	1.27E-11	***	1	0.13667094
UMP	C00105	HK2-ASO1	32.0382759	5.04921884	0.15759958	37.3797988	27.3437283	31.3913006	1.27E-11	***	2.4324788	0.38335764
UMP	C00105	DPI	36.5205454	3.1657087	0.08668295	35.3135855	34.1358574	40.1121932	1.27E-11	***	2.72779129	0.24035374
UMP	C00105	MET	46.7323091	5.344257	0.11435893	51.7441919	47.3443568	41.1083786	1.27E-11	***	3.54811074	0.40575816
UMP	C00105	PER	17.0734441	2.8710264	0.16815743	20.3862348	15.5259323	15.3081651	1.27E-11	***	1.29628669	0.21798023
UMP	C00105	HK2-ASO1-DPI	24.6674743	2.68196163	0.10872461	22.112073	24.4301299	27.46022	1.27E-11	***	1.87285697	0.20362565
UMP	C00105	HK2-ASO1-DPI-PER	9.04998761	0.58290131	0.06440907	8.41196697	9.5546621	9.18333375	1.27E-11	***	0.6871126	0.04432682
UMP	C00105	HK2-ASO1-MET	9.52529061	0.81761682	0.08583642	10.3968774	8.7752527	9.40374174	1.27E-11	***	0.72319957	0.06207569
UMP	C00105	HK2-ASO1-MET-PER	6.30855082	1.07952669	0.17112119	7.23973597	6.56062708	5.12528942	1.27E-11	***	0.47897135	0.08196214
Uracil	C00106	Ctrl	1.11131822	0.22508298	0.20253693	0.8571955	1.2855874	1.19117175	5.02E-08	***	1	0.20253693
Uracil	C00106	HK2-ASO1	6.23338084	0.35299286	0.05662944	6.24015262	5.87705081	6.58293909	5.02E-08	***	5.60899726	0.31763437
Uracil	C00106	DPI	5.3301412	0.59527767	0.11168141	5.44754011	4.68491073	5.85797275	5.02E-08	***	4.79623308	0.53565006
Uracil	C00106	MET	7.23285356	2.18733925	0.30241219	9.67711127	5.45967464	6.56177478	5.02E-08	***	6.50835508	1.96823845
Uracil	C00106	PER	1.20087611	0.35337868	0.2942674	1.59489501	1.095727	0.91200631	5.02E-08	***	1.08058708	0.31798155
Uracil	C00106	HK2-ASO1-DPI	9.93176451	0.98266609	0.09894174	9.09160381	11.0123221	9.69136764	5.02E-08	***	8.93692225	0.88423466
Uracil	C00106	HK2-ASO1-DPI-PER	10.5184822	1.28904656	0.12255062	9.95057839	9.61089934	11.9939688	5.02E-08	***	9	

Uric Acid	C00366	HK2-ASO1-MET-PER	0.14364333	0.08003407	0.55717219	0.0630477	0.14477853	0.22310376	0.3270815	0.21186553	0.11804558
Val	C00183	Ctrl	9672.73887	104.862456	0.01084103	9552.25793	9722.5203	9743.43839	2.32E-11 ***	1	0.01084103
Val	C00183	HK2-ASO1	11556.3487	431.275755	0.03731938	NA	11251.3907	11861.3067	2.32E-11 ***	1.19473387	0.04458673
Val	C00183	DPI	11358.7587	290.816869	0.02560287	11049.7857	11399.3321	11627.1584	2.32E-11 ***	1.17430635	0.03006562
Val	C00183	MET	10504.7416	59.4617258	0.00566047	10522.7703	10438.3519	10553.1024	2.32E-11 ***	1.08601521	0.00614735
Val	C00183	PER	10366.1035	269.590551	0.02600693	10055.1042	10533.377	10509.8295	2.32E-11 ***	1.07168235	0.02787117
Val	C00183	HK2-ASO1-DPI	14302.4999	287.399805	0.02009438	14001.2705	14332.5151	14573.7142	2.32E-11 ***	1.47864014	0.02971235
Val	C00183	HK2-ASO1-DPI-PER	12722.8034	73.1749591	0.00575148	12781.0028	12640.6547	12746.7527	2.32E-11 ***	1.31532584	0.00756507
Val	C00183	HK2-ASO1-MET	13500.8645	740.554417	0.05485237	13763.5963	14074.2325	12664.7647	2.32E-11 ***	1.39576439	0.07656099
Val	C00183	HK2-ASO1-MET-PER	12653.7065	74.1833432	0.00586258	12736.0984	12592.2165	12632.8047	2.32E-11 ***	1.30818238	0.00766932
Vit-C	C00072	Ctrl	3.82564173	0.86720456	0.22668211	4.82647154	3.35348465	3.296969	0.01452776 *	1	0.22668211
Vit-C	C00072	HK2-ASO1	3.56748173	0.38545845	0.10804777	3.88597536	3.67749236	3.13897747	0.01452776 *	0.93251851	0.10075655
Vit-C	C00072	DPI	3.91405443	0.25371554	0.06482167	4.20602896	3.7889175	3.74721684	0.01452776 *	1.02311055	0.06631973
Vit-C	C00072	MET	4.90213559	0.46974117	0.09582378	4.9473391	4.41142675	5.34764092	0.01452776 *	1.28138909	0.12278755
Vit-C	C00072	PER	4.24348489	1.10778603	0.26105573	4.065486	3.23547605	5.42949263	0.01452776 *	1.10921272	0.28956868
Vit-C	C00072	HK2-ASO1-DPI	3.6314777	0.53986731	0.14866326	3.36875611	3.27325731	4.25241969	0.01452776 *	0.94924668	0.14111811
Vit-C	C00072	HK2-ASO1-DPI-PER	4.57700074	0.42099898	0.09198141	4.75326842	4.09651831	4.8812155	0.01452776 *	1.19640078	0.11004663
Vit-C	C00072	HK2-ASO1-MET	5.11038885	1.3301681	0.26028706	3.60688369	5.59020148	6.13408138	0.01452776 *	1.33582526	0.34769803
Vit-C	C00072	HK2-ASO1-MET-PER	5.94143134	0.57429712	0.09665972	6.33678571	5.28268109	6.20482721	0.01452776 *	1.55305482	0.15011785
Xanthine	C00385	Ctrl	0.94326562	0.54782645	0.58077644	1.53220238	0.84874459	0.4488499	0.00036195 ***	1	0.58077644
Xanthine	C00385	HK2-ASO1	0.36947545	0.19627538	0.53122712	NA	0.2306878	0.5082631	0.00036195 ***	0.3916982	0.20808071
Xanthine	C00385	DPI	0.49232208	0.07320306	0.14868936	0.46999205	0.43288458	0.57408961	0.00036195 ***	0.52193366	0.07760598
Xanthine	C00385	MET	0.6993004	0.33364826	0.47711721	0.9869684	0.33352834	0.77740445	0.00036195 ***	0.74136106	0.35371612
Xanthine	C00385	PER	1.05257355	0.41104025	0.39050976	1.51601789	0.73214626	0.9095565	0.00036195 ***	1.11588245	0.43576299
Xanthine	C00385	HK2-ASO1-DPI	0.47959891	0.26981834	0.56259166	0.2715246	0.38281089	0.78446123	0.00036195 ***	0.50844523	0.28604704
Xanthine	C00385	HK2-ASO1-DPI-PER	2.92185413	0.95769101	0.32776825	3.77704201	1.88708448	3.1014359	0.00036195 ***	3.09759421	1.01529303
Xanthine	C00385	HK2-ASO1-MET	8.21683557	6.79419312	0.82686249	3.41261554	NA	13.0210556	0.00036195 ***	8.71105168	7.20284188
Xanthine	C00385	HK2-ASO1-MET-PER	7.04797526	0.27287265	0.03871646	7.1870562	7.22328546	6.73358412	0.00036195 ***	7.47188819	0.28928505