

**Supplementary Table 1.** Raw biomarker metabolite mean values and standard deviations in GNMT mouse normal liver (GNMT-WT) and NAFLD (GNMT-KO) sera subgroups

Family	Name (Figure 2/3)	Average GNMT-WT	SD GNMT-WT	Average GNMT-KO	SD GNMT-KO
FFAs	14:0	0.00133	0.00037	0.00156	0.00068
FFAs	16:0	0.05684	0.00455	0.05321	0.00780
FFAs	18:0	0.02066	0.00186	0.02566	0.00258
FFAs	16:1n-7	0.02425	0.00801	0.02133	0.00851
FFAs	18:1n-9	0.11622	0.01384	0.11024	0.01117
FFAs	18:2n-6	0.14900	0.02915	0.09732	0.01304
FFAs	18:3n-3 + n-6	0.02762	0.00756	0.01444	0.00271
FFAs	20:1n-9	0.01255	0.00309	0.01079	0.00101
FFAs	20:2n-6	0.00810	0.00118	0.00537	0.00038
FFAs	20:3n-3 + n-6 + n-9	0.03455	0.00485	0.03309	0.00160
FFAs	20:4n-6	0.22718	0.02386	0.33407	0.03547
FFAs	20:5n-3	0.01907	0.00250	0.00762	0.00087
FFAs	22:4n-6	0.01903	0.00132	0.01793	0.00229
FFAs	22:5n-3	0.01358	0.00154	0.00775	0.00042
FFAs	22:5n-6	0.06398	0.00517	0.05091	0.01503
FFAs	22:6n-3	0.20603	0.02302	0.20871	0.01738
LPCs	14:0	0.00538	0.00078	0.00530	0.00049
LPCs	15:0	0.00474	0.00079	0.00425	0.00071
LPCs	16:0	0.26305	0.01453	0.25591	0.01070
LPCs	16:1	0.03566	0.00715	0.04970	0.00490
LPCs	18:0	0.20518	0.00833	0.18736	0.00653
LPCs	18:1	0.15581	0.01417	0.18743	0.00793
LPCs	18:2	0.15902	0.01410	0.12840	0.00477
LPCs	20:0	0.02053	0.00370	0.00779	0.00078
LPCs	20:1	0.01685	0.00260	0.01445	0.00089
LPCs	20:2	0.00842	0.00094	0.00565	0.00031
LPCs	20:3	0.02671	0.00689	0.02735	0.00377
LPCs	20:4	0.05855	0.00559	0.09122	0.00436
LPCs	20:5	0.00432	0.00096	0.00248	0.00055
LPCs	22:4	0.00280	0.00071	0.00272	0.00038
LPCs	22:5	0.00502	0.00133	0.00428	0.00157
LPCs	22:6	0.02629	0.00212	0.02445	0.00257
SMs	d18:1/14:0	0.43469	0.06667	0.42107	0.09164
SMs	d18:1/15:0	0.02742	0.00239	0.02110	0.00104
SMs	d18:1/16:0	0.02687	0.00443	0.02611	0.00142
SMs	d18:2/16:0	0.08887	0.01347	0.08484	0.00910
SMs	d18:1/18:0	0.51618	0.03410	0.55278	0.01140
SMs	SM 36:2	0.31052	0.03088	0.28444	0.01443
SMs	SM 36:3	0.00358	0.00124	0.00286	0.00043
SMs	d18:0/16:0	0.02225	0.00254	0.02152	0.00077
SMs	d18:1/12:0	0.07039	0.01706	0.05424	0.01795
SMs	d18:2/14:0	0.02669	0.01108	0.01876	0.00358
BAs	Cholic	0.00024	0.00027	0.00043	0.00022
BAs	Deoxycholic	0.00007	0.00003	0.00015	0.00009
BAs	Taurocholic	0.00284	0.00373	0.00249	0.00143
BAs	Taurochenodeoxycholic	0.00030	0.00017	0.00014	0.00006
BAs	Taurodeoxycholic	0.00102	0.00023	0.00043	0.00015
PCs	14:0/20:4	0.00973	0.00256	0.01377	0.00107
PCs	15:0/18:2	0.00707	0.00106	0.00595	0.00135
PCs	16:0/14:0	0.00087	0.00021	0.00103	0.00020
PCs	16:0/18:1	0.05339	0.00538	0.05473	0.00194
PCs	16:0/18:2	0.13321	0.01404	0.10242	0.00426
PCs	16:0/20:4	0.05779	0.00653	0.07912	0.00300
PCs	16:0/22:6	0.15573	0.00453	0.16898	0.00476
PCs	16:1/18:2	0.06956	0.00638	0.07665	0.00469
PCs	18:0/18:2	0.08834	0.00655	0.07193	0.00127
PCs	18:0/20:3	0.01806	0.00243	0.01906	0.00187
PCs	18:0/20:4	0.02503	0.00408	0.03680	0.00254
PCs	18:0/22:6	0.02363	0.00231	0.02038	0.00245
PCs	18:1/20:4	0.02172	0.00415	0.03824	0.00418
PCs	18:1/22:6	0.01470	0.00173	0.01629	0.00236
PCs	18:2/18:2	0.11653	0.01846	0.07510	0.00641
PCs	18:2/20:4	0.04591	0.00464	0.05453	0.00294
PCs	PC 28:0	0.00011	0.00004	0.00012	0.00003
PCs	PC 32:1	0.01408	0.00456	0.01163	0.00106
PCs	PC 34:3	0.01816	0.00236	0.01604	0.00115
PCs	PC 36:3	0.09051	0.00310	0.08469	0.00350
PCs	PC 36:5	0.03588	0.00901	0.05254	0.00432

**Supplementary Table 2.** Raw biomarker metabolite mean values and standard deviations in human normal liver (S0) and NAFLD (S1, S2, S3, S3+NASH) sera subgroups.

Family	Name	Average Healthy	SD Healthy	Average NAFLD	SD NAFLD
FFAs	14:0	0.00928	0.00286	0.01024	0.00315
FFAs	16:0	0.12845	0.01632	0.13819	0.01516
FFAs	18:0	0.04322	0.00903	0.04686	0.01124
FFAs	16:1n-7	0.04930	0.02207	0.05009	0.01578
FFAs	18:1n-9	0.39533	0.01545	0.39296	0.03532
FFAs	18:2n-6	0.22697	0.04169	0.20919	0.03900
FFAs	18:3n-3 + n-6	0.01844	0.00409	0.01543	0.00356
FFAs	20:1n-9	0.00496	0.00074	0.00490	0.00103
FFAs	20:2n-6	0.00578	0.00087	0.00489	0.00080
FFAs	20:3n-3 + n-6 + n-9	0.01351	0.00229	0.01416	0.00322
FFAs	20:4n-6	0.05480	0.01499	0.06205	0.02594
FFAs	20:5n-3	0.00611	0.00508	0.00602	0.00319
FFAs	22:4n-6	0.00782	0.00121	0.00811	0.00168
FFAs	22:5n-3	0.00841	0.00381	0.00897	0.00257
FFAs	22:5n-6	0.00384	0.00094	0.00390	0.00109
FFAs	22:6n-3	0.02379	0.01116	0.02403	0.00803
LPCs	14:0	0.01895	0.01000	0.02053	0.00689
LPCs	15:0	0.01160	0.00513	0.01073	0.00249
LPCs	16:0	0.25388	0.01619	0.25266	0.01459
LPCs	16:1	0.03745	0.00959	0.04307	0.01089
LPCs	18:0	0.16868	0.01713	0.17926	0.01196
LPCs	18:1	0.17264	0.01477	0.17640	0.01178
LPCs	18:2	0.15873	0.01728	0.15476	0.01926
LPCs	20:0	0.00160	0.00080	0.00133	0.00039
LPCs	20:1	0.00453	0.00139	0.00373	0.00093
LPCs	20:2	0.00808	0.00207	0.00644	0.00155
LPCs	20:3	0.06146	0.01123	0.05907	0.01195
LPCs	20:4	0.07074	0.00822	0.06232	0.00873
LPCs	20:5	0.00541	0.00484	0.00435	0.00228
LPCs	22:4	0.00418	0.00155	0.00412	0.00129
LPCs	22:5	0.00438	0.00232	0.00446	0.00127
LPCs	22:6	0.01761	0.00483	0.01666	0.00430
SMs	d18:1/14:0	0.17951	0.02478	0.17684	0.03084
SMs	d18:1/15:0	0.08857	0.01132	0.09051	0.01514
SMs	d18:1/16:0	0.33432	0.02073	0.35128	0.03096
SMs	d18:2/16:0	0.26832	0.01469	0.24818	0.01872
SMs	d18:1/18:0	0.01474	0.00443	0.02035	0.00714
SMs	SM 36:2	0.07762	0.01585	0.07784	0.01383
SMs	SM 36:3	0.01934	0.00472	0.01513	0.00390
SMs	d18:0/16:0	0.01758	0.00288	0.01988	0.00582
SMs	d18:1/12:0	0.01122	0.00264	0.00915	0.00348
SMs	D18:2/14:0	0.02507	0.00405	0.01882	0.00631
BAs	Cholic	0.00055	0.00061	0.00061	0.00103
BAs	Deoxycholic	0.00004	0.00004	0.00012	0.00010
BAs	Taurocholic	0.00009	0.00007	0.00009	0.00008
BAs	Taurochenodeoxycholic	0.00033	0.00027	0.00035	0.00031
BAs	Taurodeoxycholic	0.00014	0.00015	0.00013	0.00011
PCs	14:0/20:4	0.00928	0.00284	0.00943	0.00332
PCs	15:0/18:2	0.01835	0.00281	0.01820	0.00462
PCs	16:0/14:0	0.01312	0.00209	0.01328	0.00415
PCs	16:0/18:1	0.06432	0.00600	0.06660	0.00672
PCs	16:0/18:2	0.11162	0.01945	0.11494	0.01879
PCs	16:0/20:4	0.05472	0.00502	0.05571	0.00548
PCs	16:0/22:6	0.10101	0.01240	0.09674	0.01081
PCs	16:1/18:2	0.07091	0.00662	0.07368	0.01168
PCs	18:0/18:2	0.09014	0.01304	0.08781	0.01195
PCs	18:0/20:3	0.02734	0.00644	0.02567	0.00725
PCs	18:0/20:4	0.01623	0.00302	0.01635	0.00294
PCs	18:0/22:6	0.01496	0.00234	0.01336	0.00262
PCs	18:1/20:4	0.02174	0.00276	0.02068	0.00369
PCs	18:1/22:6	0.00406	0.00148	0.00332	0.00088
PCs	18:2/18:2	0.08049	0.00790	0.08482	0.01302
PCs	18:2/20:4	0.02703	0.00448	0.02605	0.00359
PCs	PC 28:0	0.00408	0.00129	0.00517	0.00303
PCs	PC 32:1	0.05487	0.01192	0.05609	0.01605
PCs	PC 34:3	0.01577	0.00496	0.01543	0.00454
PCs	PC 36:3	0.10719	0.00751	0.10745	0.00835
PCs	PC 36:5	0.09276	0.01558	0.08924	0.02061