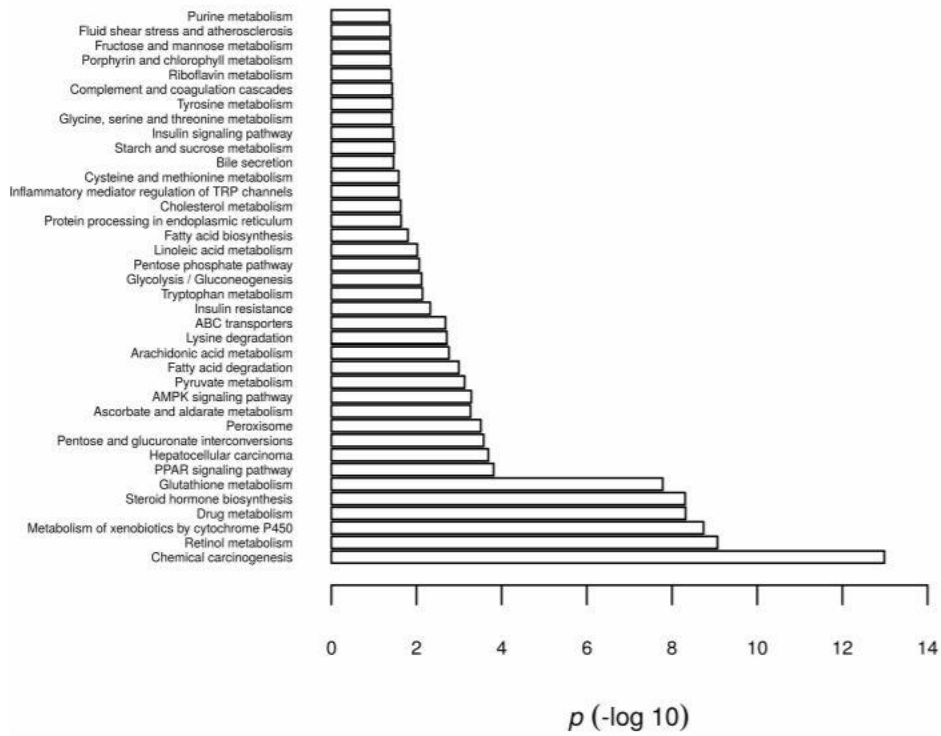
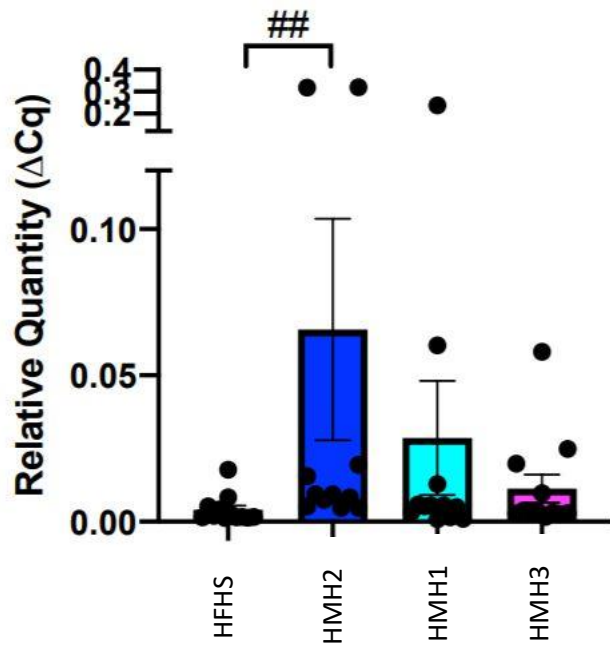


**Supplementary Figure 1.** Pathways significantly enriched from the list of 1994 differentially transcripts in HFHS diet vs Chow diet.



**Supplementary Figure 2.** Effect of HFHS diet on the Lactobacillus population in the gut microbiota of C57Bl/6J male mice after 8 weeks of treatment. ##  $p < 0.01$ .



**Supplementary Table 1.** Transcripts showing differential expression a trend in HMH supplementations vs HFHS diet comparisons.

RefSeq mRNA	HMH1 logFC	HMH1 FDR p-value	HMH2 logFC	HMH2 FDR p-value	HMH3 logFC	HMH3 FDR p-value	Symbol	Gene names
NM_008484	7.325	0.0000127	7.11	0.0000338	0.03	1.000	Lamb3	laminin, beta 3
NM_009344	-0.283	1.000	-0.99	0.00593	-0.09	1.000	Phlda1	pleckstrin homology like domain, family A, member 1
NM_008239	-0.581	1.000	-1.50	0.00593	-0.31	1.000	Foxq1	forkhead box Q1
NM_008390	0.030	1.000	0.75	0.00593	0.47	1.000	Irf1	interferon regulatory factor 1
NM_028778	0.172	1.000	0.37	0.00998	0.30	0.496	Nuak2	NUAK family, SNF1-like kinase, 2
NR_028360	-0.292	1.000	-0.56	0.0509	-0.14	1.000	1700018L02Rik	RIKEN cDNA 1700018L02 gene
NR_045284	-0.389	1.000	-0.75	0.0509	-0.22	1.000	Gm16551	predicted gene 16551
NM_001177352	-0.667	1.000	-1.55	0.0509	-0.37	1.000	Myc	myelocytomatosis oncogene
NM_010849	-0.667	1.000	-1.55	0.0509	-0.37	1.000	Myc	myelocytomatosis oncogene
NM_008599	0.031	1.000	1.58	0.0509	0.27	1.000	Cxcl9	chemokine (C-X-C motif) ligand 9
NR_028384	-0.728	1.000	-1.16	0.0629	-0.37	1.000	4930528A17Rik	RIKEN cDNA 4930528A17 gene
NM_001195632	0.073	1.000	0.30	0.0629	0.12	1.000	Arhgap32	Rho GTPase activating protein 32
NM_001256184	0.250	1.000	0.62	0.0629	0.13	1.000	Gm5108	predicted gene 5108
NM_008330	0.124	1.000	0.87	0.0629	0.37	1.000	Ifi47	interferon gamma inducible protein 47
NM_021334	0.433	1.000	1.14	0.0629	0.38	1.000	Itgax	integrin alpha X
NM_021274	0.038	1.000	1.26	0.0629	0.35	1.000	Cxcl10	chemokine (C-X-C motif) ligand 10
NM_194336	0.066	1.000	1.23	0.0917	0.47	1.000	Gbp6	guanylate binding protein 6
NM_001355757	0.121	1.000	0.58	0.0930	0.26	1.000	Irgm1	immunity-related GTPase family M member 1
NM_001039160	0.159	1.000	1.19	0.0930	0.47	1.000	Gvin1	GTPase, very large interferon inducible 1
NM_001291067	-0.511	1.000	-0.93	0.0985	-0.49	1.000	Foxa2	forkhead box A2
NM_008509	0.065	1.000	0.32	0.0998	0.07	1.000	Lpl	lipoprotein lipase
NM_010260	0.090	1.000	1.44	0.0998	0.43	1.000	Gbp2	guanylate binding protein 2

Abbreviations: logFC, log<sub>2</sub> fold change; FDR p-value, false discovery rate-corrected p-value; HFHS, High fat high sugar.