Supplemental Methods

Gnotobiotic Mouse Experiments

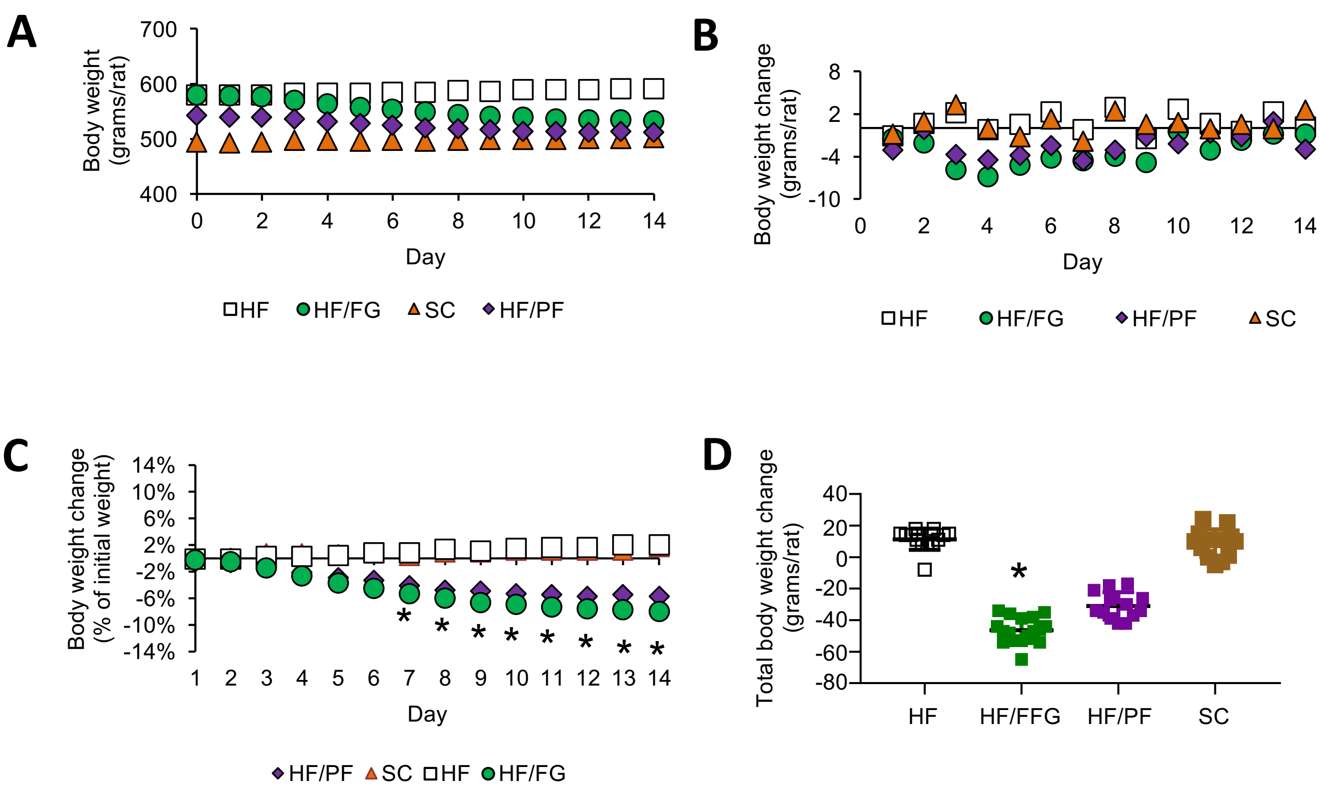
Cecal contents were collected at the time of sacrifice from rats, immediately frozen in liquid nitrogen, and stored at -80˚ C. Samples from two HF/PF and two HF/FG rats that exhibited cecal microbiota composition and weight-loss phenotypes representative of their experimental groups were weighed while frozen and then transferred to a Coy chamber (atmosphere; 77.5% N_2, 20% CO_2, 2.5% H_2). Within the Coy chamber, each microbiota sample was transferred to a tube containing 5 ml of 2 mm glass beads. Cecal samples were suspended in PBS containing cysteine (0.05%) and resazurin (1ug/ml) (200mg sample/ml buffer; note that this buffer was maintained in an anaerobic chamber for 1 week prior to use). The suspension was subsequently subjected to four rounds of vortexing (30 sec/round with 10 sec rest periods between rounds), then passed through 100 um pore diameter nylon strainers (BD Pharmingen). The resulting filtrate was mixed with an equal volume of PBS/cysteine/resazurin + 30% glycerol, and the material was split into 1.5 ml aliquots in brown crimp-top glass vials (Wheaton). Vials were crimped shut and then frozen at -80˚ C.

All experiments involving mice were performed using protocols approved by the Washington University Animal Studies Committee. Adult 10-12-week old male germ-free C57Bl/6J mice were maintained in sterile, flexible, plastic gnotobiotic isolators (Class Biologically Clean Ltd., Madison, WI) under a strict 12-hour cycle (lights on at 0600, off at 1800 h). Mice were fed an autoclaved diet (B&K autoclavable chow #7378000, Zeigler Bros Inc.) from weaning until 2 weeks prior to the beginning of an experiment. At that point, mice (10 males) were distributed into two groups ensuring no statistically significant differences between mean starting weights of groups. Each group was housed in a separate isolator (Isolators A, B). Animals began receiving a HF diet [Research Diets D12451, containing 45% of calories as fat; sterilized by irradiation (20-50 Gy)] on day -14 (relative to the day of colonization). Animals were separated into single cages within their isolators on day -12. Food “intake” (the weight of food removed from the metal hopper by the mice) and body weight were monitored on days -3, -2, and -1. Fecal samples were collected on day -1 to provide verification of the germ-free status of the animals. On day 0 at ZT3:30 (10:30 AM), animals in isolator A were gavaged with 200ul of clarified cecal contents from HF/FG rat #9-15, whereas animals in isolator B were gavaged with 200ul of clarified cecal contents from HF/PF rat #9-23, respectively. Food was provided *ad lib* for isolators A and B at ZT6:00 (1 PM) every day. Starting on day 0, food intake was monitored in both groups at ZT14:00, 2:00, and 6:00 (9 PM, 9 AM, and 1 PM). Body weight was measured daily at ZT6:00 (1 PM). Fecal samples were collected daily at 9 AM and immediately frozen in liquid nitrogen. Animals were sacrificed on day 8, and tissue samples were collected, snap-freeze and stored at -80ºC.

Another 10 male mice were distributed into 2 groups (again ensuring no statistically significant differences between starting mean weights between the groups). Each group was housed in a separate isolator (Isolators C and D). Animals began receiving high fat diet on day -14 (relative to the day of colonization). Animals were separated into single cages within their isolator on day -12. Food intake and body weights were monitored from day-7 to -1. Fecal samples were collected on day -1 to provide verification of the germ-free status of the animals. On day 0 at ZT3:30 (10:30 AM), animals in isolator C was gavaged with 200ul of clarified cecal content from HF/FG rat #9-15 and animals in isolator D was gavaged with 200ul of clarified cecal content from HF/PF rat #9-23. HF food was then provided *ad lib* for animals in isolators C and D at ZT6:00 (1 PM) every day. Starting on day 0, food intake was monitored in both groups at ZT10:00, ZT14:00, ZT2:00, and ZT6:00 (5 PM, 9 PM, 9 AM, and 1 PM). Body weight was measured daily at ZT6:00 (1 PM). Fecal samples were collected daily at ZT2:00 (9 AM) and immediately frozen in liquid nitrogen. At day 5 of *ad lib* feeding, the amount of food provided to both groups of animals was reduced by 10% (caloric restriction), and monitoring of food intake was continued as above. Animals were sacrificed for collection of liver and blood samples on day 10.

In a separate set of experiments, 12 germ-free mice were fed the HF diet for 5 days prior to treatment (Day 0). Three days prior to treatment, mice were separated into individual cages. Body weight and food intake were measured at ZT6:00 and ZT14:00 (1 PM and 9 PM). On Day 0, six of the mice were given irradiated HF diet supplemented with 80mg/kg fumagillin (HF/FG) while the other six mice were given unsupplemented HF chow. Body weight and food intake were monitored as above until day 5. Body weight was measured on days 9-13. On day 9, control and fumagillin-treated animals were switched from their home cages into cages of the opposite group, exposing them to a new diet. Animals were fasted for 4 hours before sacrifice on experimental day 19.

Supplemental Figure 1



Supplemental Figure 1. Primary Body Weight Data, Two Weeks of Intervention.

Rats were fed on HF diet for 12 weeks and then subjected to an intervention period of 2 weeks during which they consumed either SC diet ad-libitum (SC), HF diet ad-libitum (HF), HF diet with fumagillin (HF/FG), or an amount of HF food matched to the amount consumed by the HF/FG group (HF/PF).

(A) Mean daily body weights for each group during 2 weeks of intervention.

(B) Mean daily body weight changes for each group during 2 weeks of intervention.

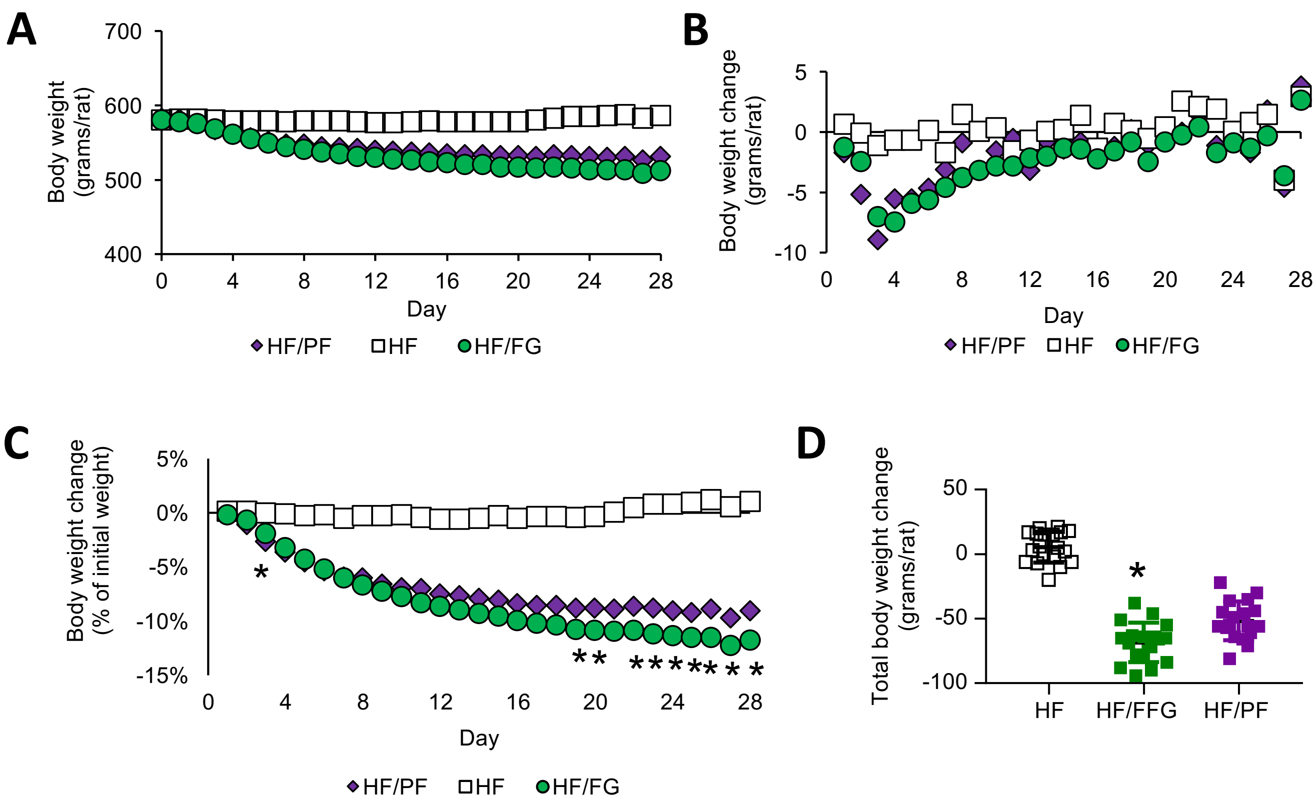
(C) Mean cumulative body weight changes for each group during 2 weeks of intervention. After 3 days of intervention, the changes in both the HF/FG and HF/PF groups were larger than those of both the HF and SC groups ($p < 0.05$). Starting at day 7, the changes in the HF/FG group were larger than those the HF/PF group; *, $p<0.028$.

(D) Total body weight changes during 2 weeks of intervention. Data are presented as mean ± SD. Both HF and SC groups were significantly different from HF/FG and HF/PF groups. Weight loss in the HF/FG group was larger than in the HF/PF group; *, $p<0.0012$.

In panels A-D, n=13 for SC, HF and HF/PF groups and n=17 for HF/FG group.

For panels C and D, two-tailed, unpaired T-tests were performed. P values of < 0.05 with a Bonferroni correction were used to define statistical significance among groups.

Supplemental Figure 2



Supplemental Figure 2. Primary Body Weight Data, Four Weeks of Intervention.

Rats were fed on HF diet for 12 weeks and then subjected to an intervention period of 4 weeks during which they consumed either HF diet ad-libitum (HF), HF diet with fumagillin (HF/FG), or an amount of HF food matched to the amount consumed by the HF/FG group (HF/PF).

(A) Mean daily body weights for each group during 4 weeks of intervention.

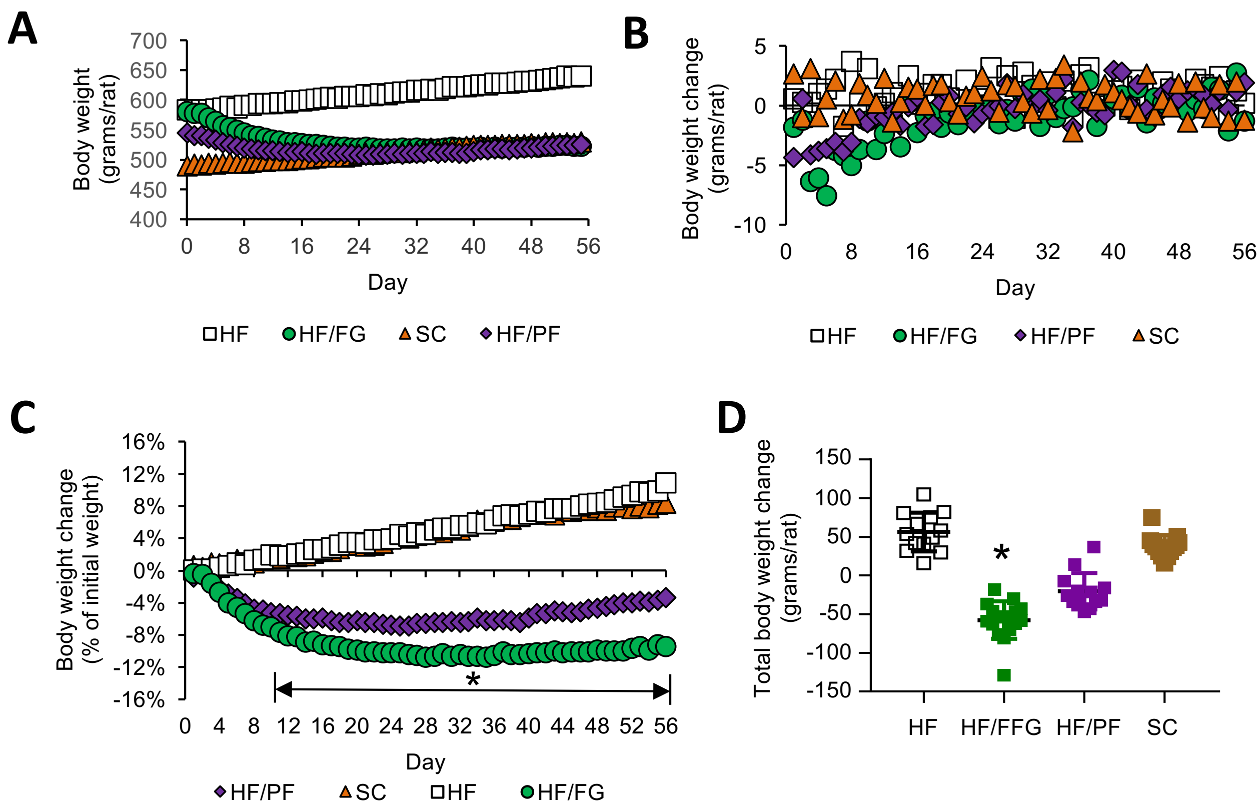
(B) Mean daily body weight changes for each group during 4 weeks of intervention.

(C) Mean cumulative body weight changes for each group during 4 weeks of intervention. After 3 days of intervention, the changes in both the HF/FG and HF/PF groups were larger than those of HF group ($p < 0.05$). Starting at day 18, changes in the HF/FG group were larger than those of the HF/PF group; *, $p<0.05$.

(D) Total body weight changes during 4 weeks of intervention. Data are presented as mean ± SD. HF group was significantly different from HF/FG and HF/PF groups. Weight loss in HF/FG group was larger than in the HF/PF group; *, $p<0.0064$.

For panels A-D, n=8 for each intervention group. For panels C and D two-tailed, unpaired T-tests were performed. P values of < 0.05 with a Bonferroni correction were used to define statistical significance among groups.

Supplemental Figure 3



Supplemental Figure 3. Primary Body Weight Data, Eight Weeks of Intervention.

Rats were fed on HF diet for 12 weeks and then subjected to an intervention period of 8 weeks during which they consumed either SC diet ad-libitum (SC), HF diet ad-libitum (HF), HF diet with fumagillin (HF/FG), or an amount of HF food matched to the amount consumed by the HF/FG group (HF/PF).

(A) Mean daily body weights for each group during 8 weeks of intervention.

(B) Mean daily body weight changes for each group during 8 weeks of intervention.

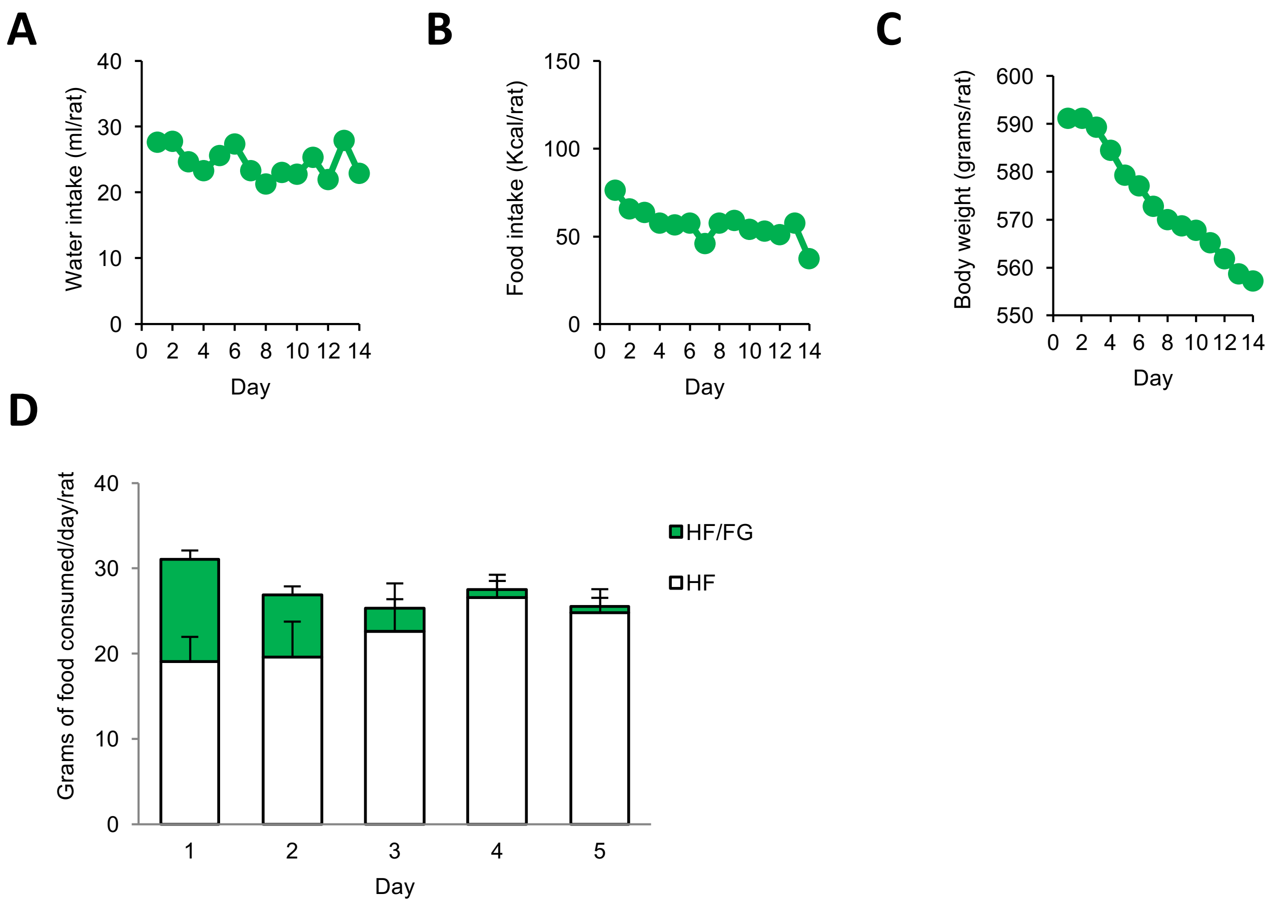
(C) Mean cumulative body weight changes for each group during 8 weeks of intervention. After 2 days of intervention, the changes in both the HF/FG and HF/PF groups were larger than those of both HF and SC groups ($p < 0.05$). Starting at day 11, changes in the HF/FG group were larger than those of the HF/PF group; *, $p<0.05$.

(D) Total body weight changes during 8 weeks of intervention. Data are presented as mean $\pm$ SD. Both HF and SC groups were significantly different from HF/FG and HF/PF groups. Weight loss in HF/FG group was larger than in the HF/PF group; *, $p<0.0008$.

In panels (**A**) to (**D**), n=13 for SC, HF and HF/PF groups and n=17 for HF/FG group.

In panels C and D, wo-tailed, unpaired T-tests were performed. P values of < 0.05 with a Bonferroni correction were used to define statistical significance among groups.

Supplemental Figure 4



Supplemental Figure 4. Fumagillin Treatment Does Not Influence Water Intake, but Activates Temporary Taste Aversion.

For panels A-C, rats (n = 5) were fed on HF diet for 12 weeks and then subjected to an intervention period of 2 weeks of feeding on HF diet supplemented with fumagillin (HF/FG).

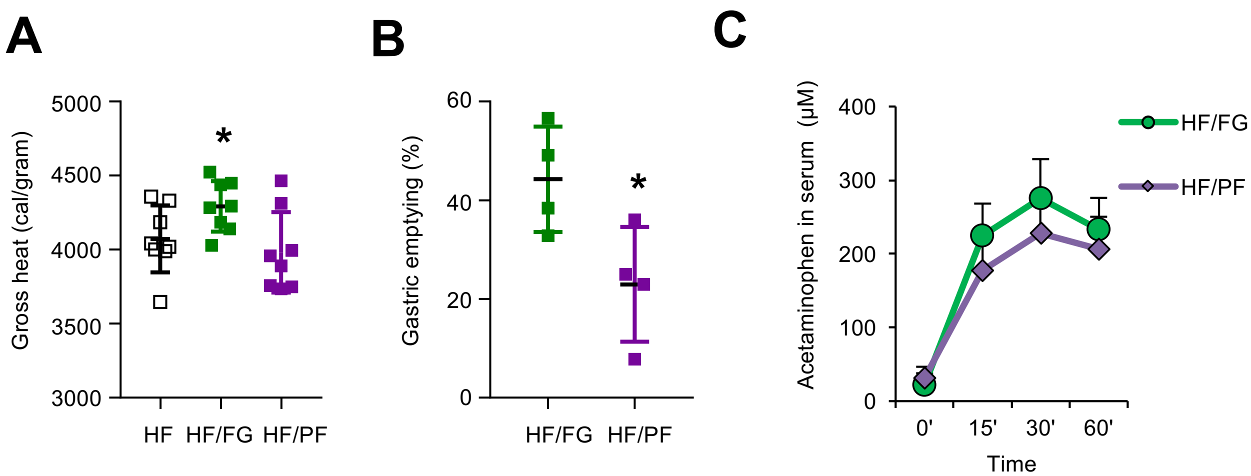
(A) Mean daily water intake.

(B) Mean daily food intake.

(C) Mean daily body weight.

(D) Single-caged, standard chow fed rats (n = 6) were given an equal mixture of HF and HF/FG food in a single feeding bin, and consumption of the two diets (distinguishable by pellet color) was monitored over a period of 5 days, (D1-D5). Two-tailed, unpaired T-tests were performed. P values of < 0.05 were used to define statistical significance between groups.
The difference between groups are statistically significant ($p<0.004$).

Supplemental Figure 5



Supplemental Figure 5. Effects of Fumagillin Treatment on Gastrointestinal Functions.

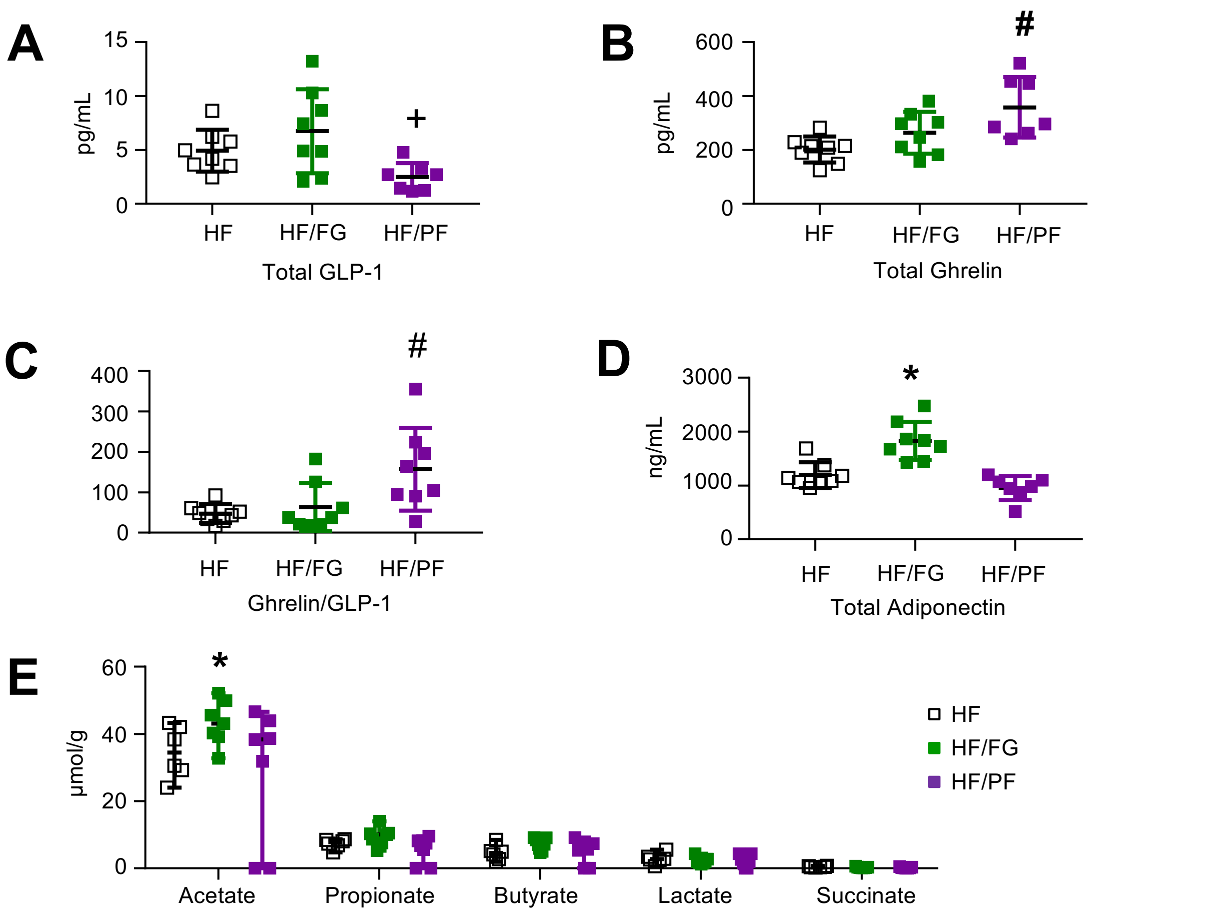
Rats were fed on HF diet for 12 weeks and then subjected to an intervention period of 4 weeks during which they consumed HF diet ad-libitum (HF), HF diet with fumagillin (HF/FG), or an amount of HF food matched to the amount consumed by the HF/FG group (HF/PF).

(A) Gross heat in fecal samples measured by bomb calorimetry. Data are mean ± SD for n=8 per group. *****, $p<0.048$ when compared HF/PF group. A two-tailed, unpaired T-tests was performed with a Bonferroni correction.

(B) Rats subjected to 4 weeks of HF/FG or HF/PF interventions were fasted overnight and refed in the morning for 1.5 hours on their respective diets. Food remaining in the stomach following the refeeding period was dried and measured. The percentage food content remaining in the stomach was determined from the dry weight of stomach content divided by the total amount of food consumed per animal multiplied by 100. Data are mean ± SD for n=4 per group. *****, $p<0.039$. A two-tailed, unpaired T-test was performed.

(C) Animals subjected to the HF/FG or HF/PF intervention for 4 weeks were fasted overnight and received an oral bolus of 4 ml/Kg acetaminophen, followed by blood sample collection at 15, 30 and 60 minutes for measurement of plasma acetaminophen levels. No significant differences were found between the groups at any time point. Data are mean ± SD for n=4 per group.

Supplemental Figure 6



Supplemental Figure 6. Changes in Appetite-regulating Hormones and Short-chain fatty acid levels after Diet Interventions.

Wistar rats were fed HF diet for 12 weeks and then subjected to an intervention period of 4 weeks during which they consumed HF diet *ad libitum* (HF), HF diet with fumagillin (HF/FG), or an amount of HF food matched to the amount consumed by the HF/FG group (HF/PF). Blood samples and cecal contents were collected from rats at ZT6:00 (1 PM), just before their normal feeding time. Data are presented as mean ± SD, with n=8 for each group.

(A) Plasma GLP-1 levels. +, $p<0.05$ when compared to HF/FG group.

(B) Plasma ghrelin levels. #, $p<0.05$ when compared to HF group.

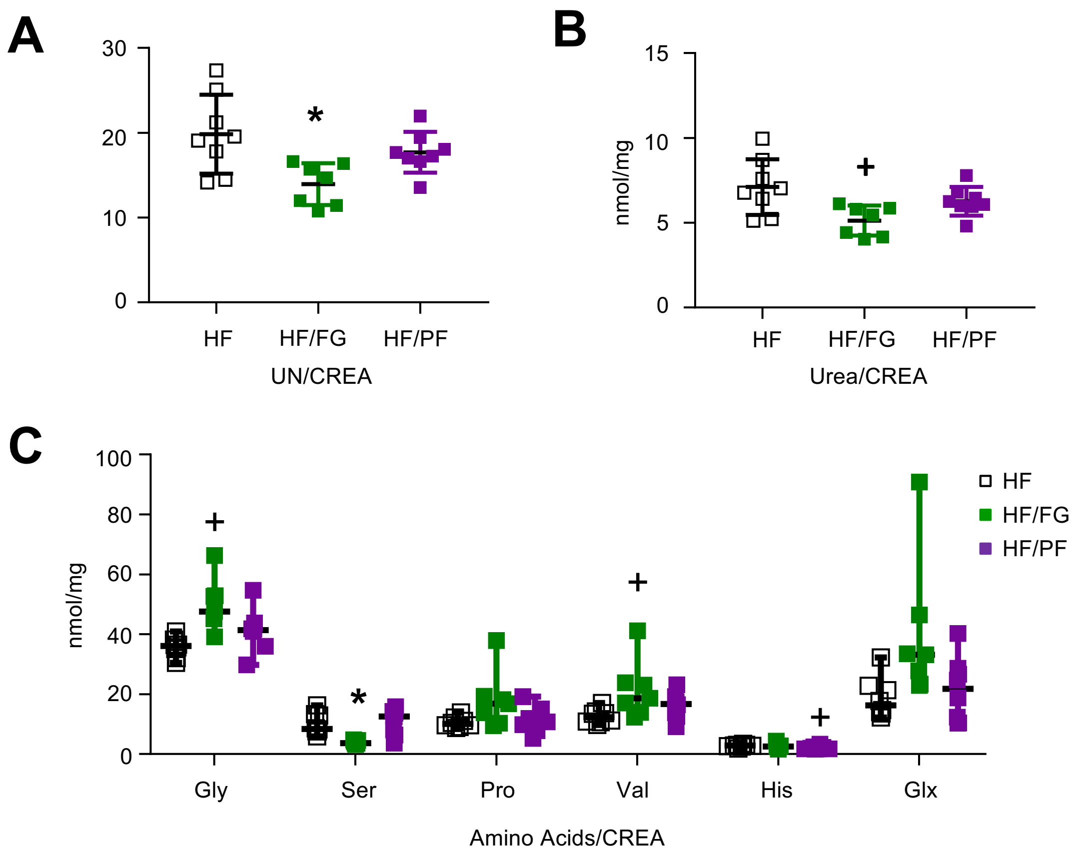
(C) Ratio of ghrelin to GLP-1. #, $p<0.03$ when compared to HF group.

(D) Plasma total adiponectin levels. *, $p<0.01$ when compared to the other groups.

For panels A-D, two-tailed, unpaired T-tests were performed. P values of < 0.05 with a Bonferroni correction were used to define statistical significance among groups.

(E) Short-chain fatty acid levels in cecal samples. *****, $p<0.05$ when compared to the other groups after a two-way ANOVA followed by a Tukey's multiple comparisons test.

Supplemental Figure 7



Supplemental Figure 7. Effects of Fumagillin on Rat Urine Metabolites.

Wistar rats were fed on HF diet for 12 weeks and then subjected to an intervention period of 4 weeks during which they consumed HF diet *ad-libitum* (HF), HF diet with fumagillin (HF/FG), or an amount of HF food matched to the amount consumed by the HF/FG group (HF/PF). Urine samples were collect from rats during a 24-hour period in metabolic cages. Data are presented as mean ± SD, with n=8 for each group.

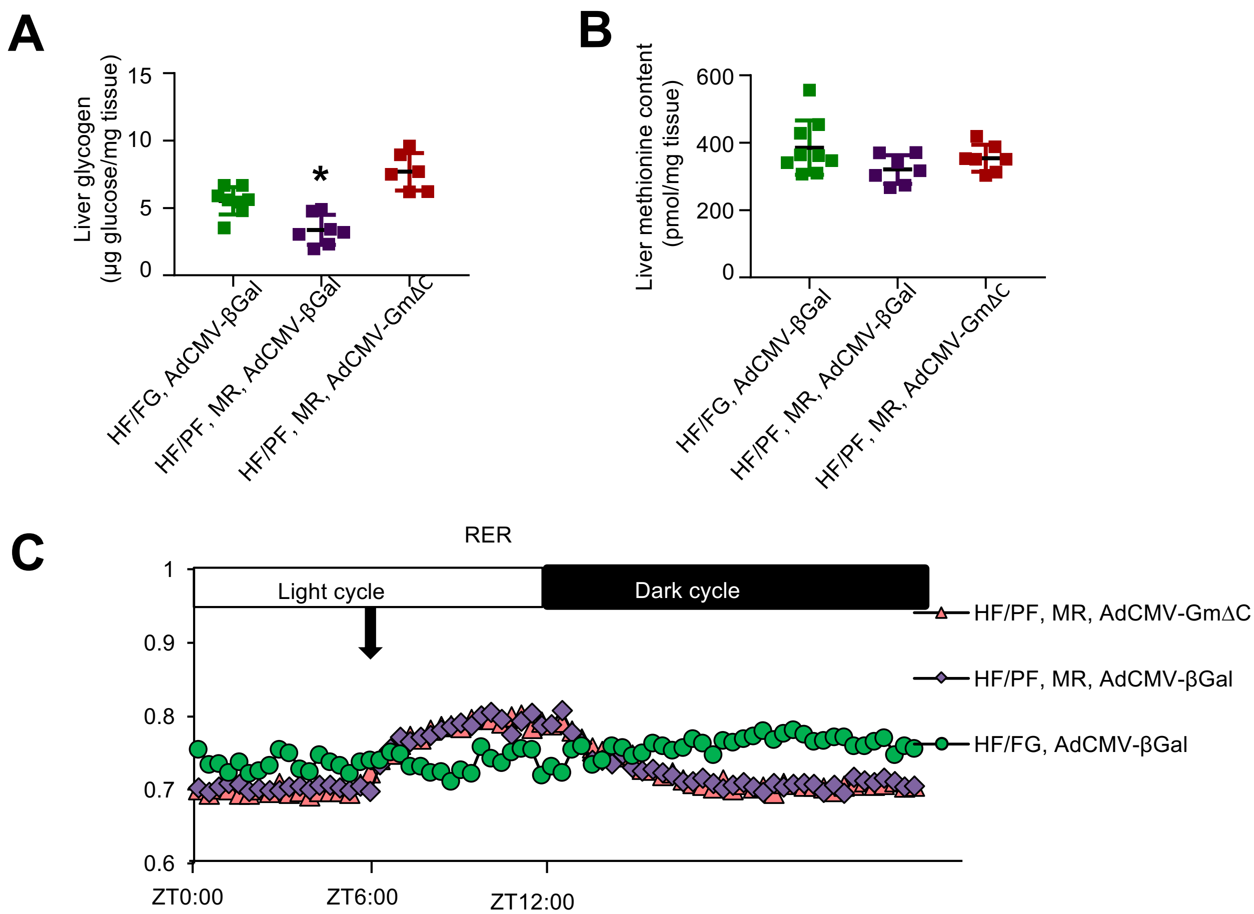
(A) Urea nitrogen (UN) levels (normalized to CREA). *****, $p<0.05$ when compared to the other groups.

(B) Urea levels (normalized to CREA). +, $p<0.05$ when compared to HF group.

(C) Urine amino acid levels (normalized to CREA). *****, $p<0.05$ compared to the other two groups. +, $p<0.05$ when compared to HF group.

For all panels, wo-tailed, unpaired T-tests were performed. P values of < 0.05 with a Bonferroni correction were used to define statistical significance among groups.

Supplemental Figure 8



Supplemental Figure 8. Effects of Methionine Restriction and Manipulation of Liver Glycogen Levels on Feeding behavior.

Wistar rats were fed on HF diet for 12 weeks and then subjected to an intervention period of 4 weeks during which rats were fed HF diet with fumagillin *ad libitum* (HF/FG), or an amount of HF food matched to the amount consumed by the HF/FG group (HF/PF), in the presence or absence of methionine restriction (MR), and the presence or absence of "clamping" of liver glycogen levels by adenovirus-mediated expression of GmΔC (See main **Figure 7** for GMΔC expression data). Liver samples were collected at ZT6:00 (1 PM), immediately prior to the normal once-daily provision of food. Data are presented as mean ± SD for n=5-7 per group.

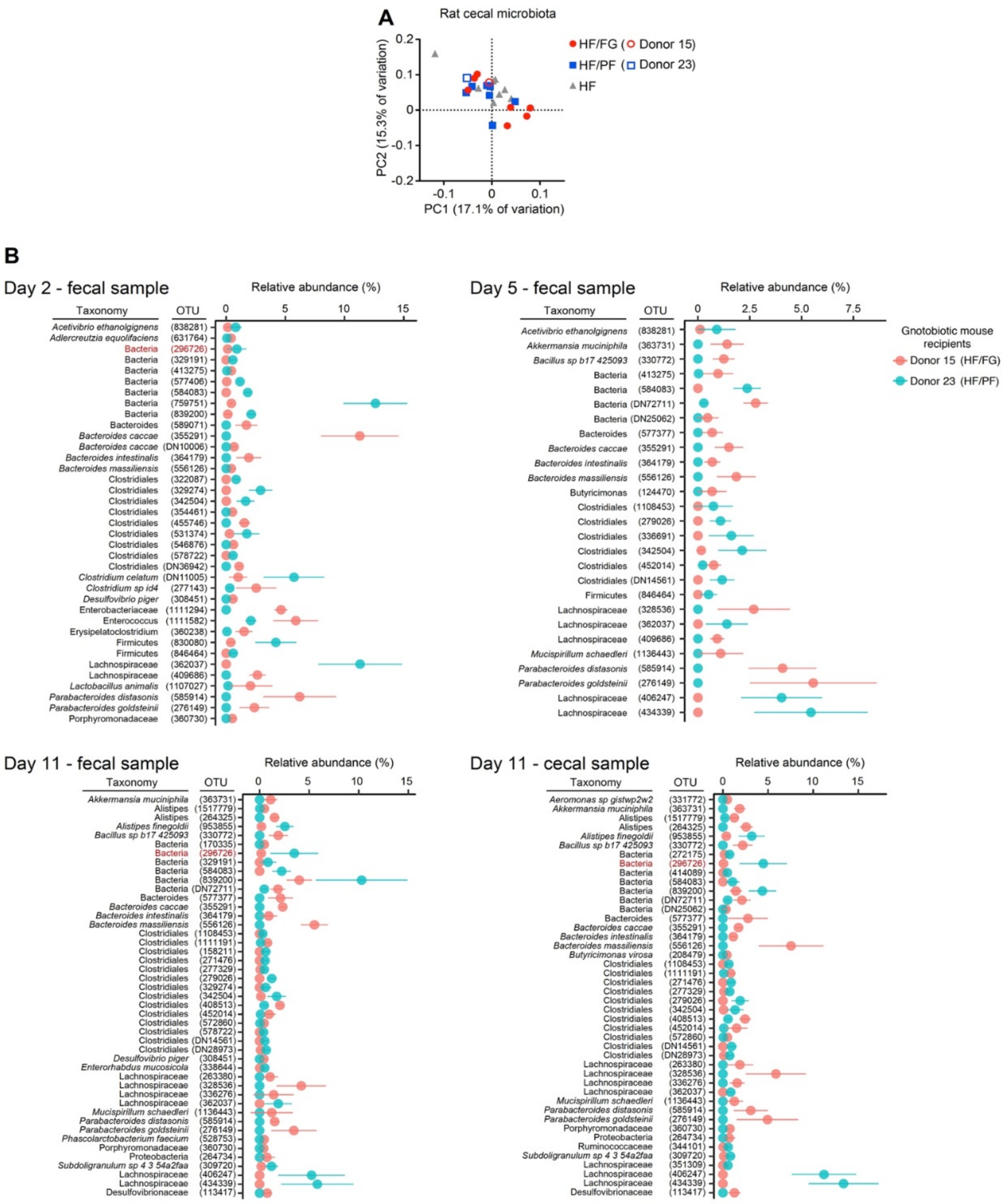
(A) Hepatic glycogen content. *, $p<0.005$ when compared to the other groups.

(B) Liver methionine content.

(C) RER measured over 24 hours. Food was given to all groups at ZT6:00 (1 PM) as shown by the downward arrow.

For panels A and B, two-tailed, unpaired T-tests were performed. P values of < 0.05 with a Bonferroni correction were used to define statistical significance among groups.

Supplemental Figure 9

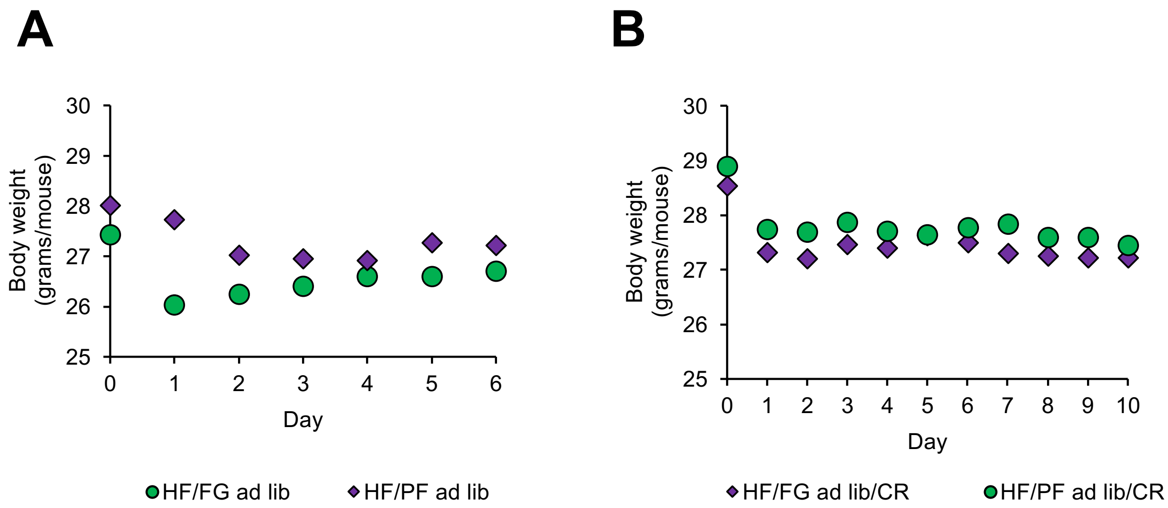


Supplemental Figure 9. Microbiota transplant experiments.

(A) Principal component analysis using the weighted UniFrac dissimilarity metric to compare the cecal microbiota of rats fed the high fat diet *ad libitum* (HF), the high fat diet with fumagillin *ad libitum* (HF/FG), or pair fed the HF diet based on food consumption of the fumagillin-treated group (HF/PF). Rats used as donors in cecal microbiota transplant experiments are noted using open symbols.

(B) Community composition in mice receiving rat cecal microbiota transplants. Relative abundances (mean ± SD) of all significant indicator species ($p<0.05$, fdr corrected) are shown for fecal and cecal samples obtained from recipient mice (n=5 mice per rat donor microbiota). Additional indicator species analyses performed on the groups of rats shown in panel A and restricted to the 97%ID OTUs with significant indicator values in mice, yielded only one taxon (OTU 296726, unclassified phylogeny; highlighted in red) that was indicative of fumagillin treatment in rats ($p<0.005$, uncorrected).

Supplemental Figure 10



Supplemental Figure 10. Lack of Effect of HF/FG versus HF/PF Rat Cecal Matter on Body Weights Upon Transplantation into Germ-free Mice.

(A) Daily body weight of *ad libitum* fed germ-free mice transplanted with cecal matter from HF/FG or HF/PF rats. These data are from animals described in Figures 8A and B.

(B) Daily body weight of germ-free mice transplanted with cecal matter from HF/FG or HF/PF rats. These mice were fed ad-libitum for 6 days followed by 10% caloric restriction, corresponding to animals/data shown in Figures 8C and D.

Supplemental Table 1. Composition of diets used in this study. Composition of these custom-formulated diets (Research Diets, specific product number shown for each of the HF, HF/FG and HF/MR diets) is presented as % of kcal, and with the forms of fat, protein, and carbohydrate used shown in parentheses. Harland Teklad 7001 is described in detail at http://harlan.com/teklad/rodent/standard/7001.htm.

	Fat	Protein	Carbohydrate	Energy Density	Fumagillin
HF, D12451	45% of kcal (12.3% soybean oil; 87.7% lard)	20% of kcal (100% casein)	35% of kcal (21% corn starch; 29% maltodextrin; 50% sucrose)	4.73 kcal/g	
SC, Teklad 7001	13 % of kcal	34% of kcal	53% of kcal	3.0 kcal/g	
HF/FG, D10120602	Same as HF, D12451			4.73 kcal/g	80 mg/kg
HF/MR, D13050201	Based on D12451, ½ protein as crystalline AA with 50% reduced methionine			4.73 kcal/g	

Supplemental Table 2. Measurement of plasma acylcarnitines, amino acids, conventional metabolites and hormones, as well as liver and gastrocnemius muscle acylcarnitines, acyl CoAs, ceramides, amino acids, and organic acids were performed as described previously (23-26). Data are shown as ratios of analyte levels in the HF/FG compared to HF group (HF/FG:HF); HF/FG compared to HF/FP groups (HF/FG:HF/PF), and HF/PF compared to HF groups (HF/PF:HF) at both the 2 and 8 week intervention time points. Statistically significant changes are colored in red (increase) or blue (decrease).

Acylcarnitines	**2W**			**8W**		
Plasma	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**
C2	**1.77**	1.00	**1.76**	1.00	0.85	1.18
C3	1.46	1.40	1.05	1.24	1.17	1.06
C4/Ci4	1.08	1.79	0.60	0.65	1.14	0.57
C5:1	0.74	**0.46**	**1.60**	0.78	0.62	**1.25**
C5	1.32	1.33	0.99	1.11	1.08	1.02
C4-OH	1.23	**0.70**	**1.77**	1.09	**0.60**	**1.82**
C6	0.95	1.61	0.59	0.39	0.44	0.88
C5-OH/C3-DC	1.21	1.04	1.16	0.85	0.84	1.01
C4-DC/Ci4-DC	0.74	**0.59**	1.25	0.70	**0.48**	**1.45**
C8:1	0.96	0.67	1.43	1.28	0.74	1.73
C8	0.84	**0.21**	**4.11**	1.02	**0.36**	**2.82**
C5-DC	0.95	1.25	0.76	**0.63**	1.59	0.39
C8:1-OH/C6:1-DC	0.93	**0.33**	**2.84**	0.86	**0.63**	**1.38**
C6-DC	1.91	0.46	4.14	0.99	0.29	3.36
C10:3	0.95	0.92	1.03	1.04	0.87	1.19
C10:2	2.25	0.72	3.11	0.86	0.89	0.96
C10:1	0.80	0.68	1.18	0.42	0.28	1.47
C10				2.14	0.75	2.85
C7-DC				0.53		0.02
C8:1-DC	1.28	0.55	2.34	1.05	**0.37**	2.82
C10-OH/C8-DC	0.64	**0.08**	**8.19**	1.16	**0.13**	**9.00**
C12:1	1.21	0.53	2.27	0.71	0.57	1.24
C12	1.13	0.91	1.24	0.78	0.80	0.98
C12-OH/C10-DC	0.91	0.37	2.46	1.41	1.36	1.04
C14:2	0.64	0.47	1.37	1.69	0.67	2.51
C14:1	0.90	0.62	1.46	0.79	0.79	0.99
C14	1.03	0.91	1.12	0.78	0.72	1.09
C14:1-OH	0.94	0.50	1.88	1.00	1.22	0.82
C14-OH/C12-DC	1.90	0.90	2.11	0.96	1.19	0.81
C16:2	0.48	0.31	1.58	0.94	0.66	1.42
C16:1	0.63	0.78	0.81	0.62	0.76	0.81
C16	0.87	0.78	1.13	0.77	0.77	1.01
C16:1-OH/C14:1-DC	0.80	0.79	1.02	0.86	0.92	0.94
C16-OH/C14-DC	0.88	0.74	1.19	0.99	1.24	0.80

C18:2	0.72	0.73	0.98	0.63	0.80	0.79
C18:1	**0.76**	0.85	0.89	**0.59**	0.72	0.82
C18	1.00	0.86	1.16	0.85	0.87	0.98
C18:2-OH	3.12	0.72	**4.32**	1.10	0.34	3.24
C18:1-OH/C16:1-DC	0.80	0.68	1.18	0.67	0.80	0.83
C18-OH/C16-DC	0.90	0.94	0.97	0.79	1.13	0.70
C20:4	0.77	0.67	1.16	0.69	0.74	0.93
C20	0.90	0.65	1.38	0.81	0.81	1.00
C18:1-DC	0.78	0.63	1.24	1.01	0.89	1.14
C20-OH/C18-DC	1.95	0.55	3.52	0.73	0.38	1.90
C22	0.96	0.84	1.15	0.86	0.75	1.15
Liver						
C2	0.87	0.74	1.17	0.77	0.76	1.02
C3	0.84	1.12	0.75	0.84	1.18	0.71
C4/Ci4	0.73	1.66	**0.44**	**0.40**	0.89	**0.45**
C5:1	1.04	**1.71**	**0.61**	0.90	1.15	**0.78**
C5	0.86	1.10	0.78	0.80	0.91	0.88
C4-OH	1.35	0.64	**2.12**	1.36	0.79	1.71
C6	0.61	1.22	0.50	0.61	1.26	0.49
C5-OH/C3-DC	1.18	0.93	1.27	1.14	0.98	1.16
C4-DC/Ci4-DC	0.87	0.63	1.39	0.94	0.71	1.33
C8:1	**0.47**	0.79	0.59	**0.51**	0.62	0.83
C8	0.84	0.75	1.13	1.21	1.21	1.00
C5-DC	1.26	0.91	1.39	1.47	1.12	1.31
C8:1-OH/C6:1-DC	1.02	0.73	1.39	1.22	0.90	1.35
C6-DC	1.17	**0.60**	**1.94**	1.17	0.74	**1.58**
C10:3	0.73	**0.52**	1.39	1.05	0.71	**1.48**
C10:2	0.69	0.79	0.87	0.81	0.66	1.23
C10:1	0.86	1.14	0.76	0.93	1.35	0.69
C10	0.80	0.97	0.83	1.13	1.10	1.03
C7-DC	1.78	1.27	1.41	**1.93**	1.44	1.34
C8:1-DC	0.82	0.59	1.39	1.15	0.75	1.53
C10-OH/C8-DC	1.07	0.57	1.86	1.62	0.94	1.73
C12:2	0.47	**0.35**	1.35	1.04	0.67	1.56
C12:1	0.61	0.55	1.10	0.87	0.84	1.04
C12	**0.38**	**0.49**	0.77	0.67	0.85	0.79
C12:2-OH/C10:2-DC	0.95	0.79	1.20	1.29	1.06	1.22
C12:1-OH/C10:1-DC	1.03	0.66	1.55	1.04	0.83	1.26
C12-OH/C10-DC	1.44	**0.55**	**2.61**	0.94	0.65	1.44
C14:3	1.33	0.92	1.45	1.32	1.21	1.09
C14:2	**0.32**	**0.41**	0.79	1.07	1.08	0.99
C14:1	**0.29**	**0.41**	0.72	**0.54**	0.95	**0.58**
C14	**0.24**	0.46	**0.53**	0.62	1.30	**0.48**

C14:3-OH/C12:3-DC	1.10	0.56	1.95	1.51	0.66	2.28
C14:2-OH/C12:2-DC	0.62	0.39	1.59	1.06	0.76	1.39
C14:1-OH/C12:1-DC	0.62	0.58	1.07	0.79	0.68	1.17
C14-OH/C12-DC	1.13	**0.45**	**2.51**	0.63	0.55	1.14
C16:3	0.47	0.77	0.61	0.98	0.70	1.40
C16:2	**0.24**	0.39	**0.60**	0.62	1.42	**0.44**
C16:1	**0.22**	0.48	**0.45**	**0.53**	1.21	**0.44**
C16	**0.25**	**0.58**	0.42	0.74	1.28	**0.58**
C16:3-OH/C14:3-DC	0.24	0.14	1.69	1.04	0.68	1.53
C16:2-OH/C14:2-DC	0.49	0.50	0.97	0.64	0.73	0.87
C16:1-OH/C14:1-DC	0.47	**0.44**	1.08	0.61	0.73	0.84
C16-OH/C14-DC	0.75	0.46	1.65	0.70	0.62	1.13
C18:3	**0.27**	0.51	**0.53**	0.72	1.16	**0.63**
C18:2	**0.20**	0.59	**0.33**	0.67	1.91	**0.35**
C18:1	**0.21**	0.69	**0.31**	**0.55**	1.50	**0.36**
C18	**0.56**	0.85	**0.67**	0.79	0.99	0.79
C18:3-OH/C16:3-DC	0.67	0.63	1.07	0.61	0.65	0.93
C18:2-OH/C16:2-DC	**0.58**	0.62	0.94	0.80	1.04	0.77
C18:1-OH/C16:1-DC	0.61	**0.50**	1.21	0.63	0.79	0.80
C18-OH/C16-DC	0.90	0.54	1.67	0.93	0.84	1.10
C20:4	**0.24**	**0.44**	**0.54**	0.47	1.13	**0.41**
C20:3	**0.23**	0.52	**0.45**	0.48	1.42	**0.34**
C20:2	**0.20**	0.73	**0.27**	0.62	1.45	0.43
C20:1	**0.26**	0.80	**0.32**	0.57	1.30	**0.44**
C20	0.67	0.73	0.92	0.64	1.00	0.64
C20:3-OH/C18:3-DC	0.99	0.63	1.56	0.83	0.86	0.96
C20:2-OH/C18:2-DC	1.01	1.06	0.95	0.92	0.86	1.07
C20:1-OH/C18:1-DC	0.76	0.71	1.06	0.68	0.56	1.23
C20-OH/C18-DC/C22:6	0.69	0.74	0.92	1.07	1.31	0.82
C22:5	**0.40**	0.89	**0.45**	0.67	1.54	0.43
C22:4	**0.28**	0.73	**0.39**	0.43	0.56	0.77
C22:3	0.58	0.88	0.66	1.14	0.84	1.35
C22:2	0.88	1.01	0.87	1.94	1.03	1.88
C22:1	0.79	1.10	0.71	0.76	1.24	0.61
C22	0.98	0.88	1.10	1.11	1.58	0.70
Gastrocnemius						
C2	1.04	0.96	1.08	1.05	0.96	1.10
C3	1.12	1.43	0.78	0.84	0.82	1.03
C4/Ci4	0.90	1.07	0.84	0.87	1.00	0.87
C5:1	1.19	1.25	0.95	0.88	0.89	0.99
C5	1.99	2.28	0.87	1.02	0.85	1.20
C4-OH	1.29	**0.50**	2.57	0.85	**0.38**	2.23
C6	0.65	0.70	0.93	0.73	0.97	0.76

C5-OH/C3-DC	0.87	0.91	0.96	0.79	0.74	1.07
C4-DC/Ci4-DC	1.04	0.93	1.11	0.86	0.72	1.18
C8:1	1.19	1.31	0.90	0.93	1.16	0.80
C8	0.50	0.60	0.84	0.63	1.09	0.57
C5-DC	0.84	**0.40**	2.10	0.97	**0.36**	2.70
C8:1-OH/C6:1-DC	1.17	1.30	0.90	0.77	0.73	1.05
C6-DC	1.06	0.74	1.43	0.82	**0.50**	1.65
C10:3	1.16	0.87	1.34	0.76	0.67	1.14
C10:2	0.73	1.91	0.38	0.49	1.07	0.46
C10:1	0.94	1.00	0.94	0.93	0.98	0.96
C10	0.61	0.77	0.79	0.59	0.94	0.63
C7-DC	1.41	1.51	0.93	0.82	1.98	0.41
C8:1-DC	1.45	1.17	1.24	0.77	0.76	1.02
C10-OH/C8-DC	1.16	0.79	1.48	1.38	0.88	1.57
C12:2	0.99	0.81	1.22	1.25	1.40	0.90
C12:1	0.92	0.67	1.36	0.66	0.71	0.93
C12	**0.42**	0.48	0.87	0.57	0.76	0.74
C12:2-OH/C10:2-DC	1.57	0.99	1.58	0.62	1.89	0.33
C12:1-OH/C10:1-DC	0.84	1.32	0.63	0.65	0.89	0.73
C12-OH/C10-DC	1.34	1.32	1.02	0.94	1.21	0.78
C14:3	0.42	0.54	0.78	0.51	1.09	0.47
C14:2	0.42	0.72	0.59	0.44	0.60	0.74
C14:1	0.44	0.57	0.78	0.45	0.77	0.59
C14	**0.36**	0.53	0.69	0.55	0.89	0.62
C14:3-OH/C12:3-DC	0.95	1.03	0.92	1.20	1.38	0.87
C14:2-OH/C12:2-DC	2.38	1.12	2.12	0.90	1.12	0.80
C14:1-OH/C12:1-DC	1.00	0.90	1.11	0.73	0.96	0.76
C14-OH/C12-DC	1.08	1.30	0.83	0.61	0.52	1.17
C16:3	0.52	0.79	0.65	0.59	0.99	0.60
C16:2	0.35	0.70	0.50	0.62	1.05	0.59
C16:1	**0.38**	0.71	0.53	**0.48**	0.85	0.57
C16	**0.33**	0.53	0.61	0.55	0.73	0.76
C16:3-OH/C14:3-DC	0.90	0.59	1.53	0.54	0.90	0.60
C16:2-OH/C14:2-DC	0.76	1.52	0.50	1.00	1.13	0.89
C16:1-OH/C14:1-DC	0.90	1.13	0.80	0.61	0.75	0.82
C16-OH/C14-DC	1.30	1.24	1.04	0.76	1.00	0.76
C18:3	**0.36**	0.91	0.39	0.37	0.70	0.54
C18:2	**0.34**	0.90	0.38	0.53	0.70	0.76
C18:1	**0.36**	0.79	0.46	**0.51**	0.80	0.64
C18	**0.49**	0.79	0.62	0.67	0.87	0.77
C18:3-OH/C16:3-DC	0.91	0.84	1.08	0.70	1.06	0.67
C18:2-OH/C16:2-DC	1.47	1.39	1.06	0.83	0.65	1.27
C18:1-OH/C16:1-DC	1.65	1.89	0.87	0.53	0.76	0.69

C18-OH/C16-DC	0.96	1.26	0.76	0.91	0.98	0.92
C20:4	0.52	0.82	0.63	0.72	0.88	0.82
C20:3	0.39	0.98	0.40	0.51	0.81	0.63
C20:2	0.51	0.75	0.68	0.91	0.97	0.93
C20:1	0.47	0.70	0.67	1.04	1.45	0.72
C20	0.90	1.29	0.70	1.47	0.71	2.06
C20:3-OH/C18:3-DC	1.33	2.57	0.52	0.90	0.79	1.14
C20:2-OH/C18:2-DC	1.19	1.18	1.01	0.90	0.82	1.09
C20:1-OH/C18:1-DC	1.26	0.70	1.79	0.89	0.88	1.01
C20-OH/C18-DC/C22:6	0.49	1.00	0.49	0.56	1.26	0.44
C22:5	0.38	0.99	0.38	1.13	1.63	0.69
C22:4	0.50	1.21	0.42	0.98	1.38	0.71
C22:3	0.59	0.60	0.99	2.89	1.52	1.91
C22:2	1.19	1.52	0.78	1.05	1.07	0.98
C22:1	1.23	1.60	0.77	1.07	1.62	0.66
C22	1.25	1.64	0.76	0.64	0.92	0.69
Acyl CoAs	**2W**			**8W**		
Liver	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**
CoA	0.76	1.13	0.68	0.97	1.22	0.79
acetyl	1.08	1.23	0.87	0.79	1.13	0.70
propionyl	0.98	1.55	0.63	0.79	1.24	0.64
crotonyl	1.06	2.02	0.52	1.33	1.11	1.19
butyl	0.78	1.99	0.39	0.66	1.29	0.52
b-hydroxy C3	0.88	1.43	0.61	1.34	1.55	0.86
3-me-crotonyl	0.82	0.84	0.98	0.91	0.95	0.95
isovaleryl	0.91	1.46	0.63	0.64	1.44	0.44
malonyl	1.35	1.89	0.72	0.89	1.63	0.55
hexenoyl	0.90	1.67	0.54	1.40	1.43	0.97
hexanoyl	0.66	1.87	0.35	0.60	1.58	0.38
succinyl	0.95	0.92	1.03	0.85	0.64	1.33
glutaryl	1.00	2.55	0.39	0.57	1.28	0.45
C8:1	0.63	0.99	0.64	1.21	1.25	0.97
Octanoate	0.81	1.55	0.53	1.59	1.46	1.08
C9:1	1.46	1.77	0.83	**4.99**	2.61	1.91
C9	0.72	1.36	0.53	2.46	2.54	0.97
C10:3	0.78	1.53	**0.51**	0.96	1.41	0.69
C10:2	1.09	1.07	1.01	1.21	1.86	0.65
C10:1	1.23	1.37	0.90	1.34	1.18	1.14
Decanoate	0.72	0.84	0.85	0.94	1.06	0.89
C11:2	1.24	0.77	1.61	0.78	0.63	1.24
C11:1	1.19	1.60	0.75	1.57	2.26	0.69
C11	1.31	2.44	0.54	1.10	2.32	0.48

C12:3	0.90	1.73	0.52	1.55	2.37	0.65
C12:2	2.27	1.15	1.97	0.79	0.72	1.11
C12:1	0.89	0.72	1.24	1.24	1.38	0.90
Laurate	0.60	0.68	0.88	0.85	1.63	0.52
C13	1.00	1.16	0.86	1.19	1.49	0.80
C12-OH	0.87	0.43	2.04	0.53	0.58	0.93
C14:2	**0.46**	1.05	**0.44**	0.52	1.83	**0.28**
C14:1	**0.43**	0.64	0.67	0.67	1.48	0.46
Myristate	**0.49**	0.95	**0.51**	**0.64**	1.48	**0.43**
C15:2	0.53	0.51	1.04	0.52	0.60	0.88
C15:1	0.68	1.31	0.52	1.07	1.83	0.58
C15/C14:1-OH	0.63	0.74	0.85	0.63	1.13	0.56
C14-OH	0.79	0.60	1.32	0.65	0.89	0.73
C16:3	0.50	0.34	1.50	0.60	0.34	1.78
C16:2	0.56	0.40	1.41	1.02	1.04	0.98
C16:1	0.34	0.43	0.78	0.63	1.09	**0.57**
Palmitate	**0.48**	**0.58**	0.83	1.01	1.27	0.79
Linolenate	**0.48**	0.58	0.83	1.13	0.88	1.28
Linoleate	**0.47**	**0.69**	**0.69**	0.97	1.40	0.69
Oleate	**0.38**	**0.64**	0.59	0.75	1.03	**0.73**
Stearate	0.74	0.84	0.89	1.10	1.08	1.02
C19:3	0.99	**0.38**	2.61	1.84	0.84	2.19
C18:3-OH	0.84	0.35	2.40	0.74	0.69	1.07
C18:2-OH	0.75	**0.45**	1.66	0.88	**0.67**	1.31
C18:1-OH	0.95	**0.43**	2.22	0.92	0.93	0.99
C20:5	0.57	0.63	0.90	0.90	0.62	1.45
C20:4	0.71	0.68	1.04	0.80	0.71	1.12
C20:3	0.61	0.57	1.07	0.74	0.52	1.42
C20:2	0.52	1.04	**0.50**	0.73	0.91	0.80
C20:1	0.59	1.33	**0.45**	0.59	0.73	0.81
C20	0.84	0.76	1.11	1.52	1.40	1.08
C20:3-OH	0.80	0.32	2.51	1.32	1.04	1.28
C20:2-OH	0.53	0.39	1.34	0.88	0.50	1.75
C20:1-OH	1.16	1.12	1.04	1.27	0.93	1.37
C20:0-OH	0.52	0.43	1.19	1.03	0.79	1.31
C22:6	0.58	0.61	0.96	0.77	0.68	1.13
C22:5	0.51	0.52	0.97	0.88	1.12	0.79
C22:4	0.58	0.63	0.92	0.57	0.72	0.80
C22:3	0.52	0.87	0.59	0.79	0.48	1.63
C22:2	0.72	0.41	1.73	0.78	0.40	1.95
C22:1	0.53	0.69	0.77	0.83	0.72	1.14
Gastrocnemius						
C16:3	1.34	0.50	2.66	0.17	0.07	2.43

C16:2	0.71	0.43	1.66	0.92	0.72	1.28
C16:1	0.49	0.78	0.63	0.38	0.43	0.89
Palmitate	0.57	**0.43**	1.33	0.67	**0.45**	1.48
Linolenate	0.59	0.91	0.65	1.10	0.95	1.16
Linoleate	0.75	1.06	0.71	0.64	0.68	0.94
Oleate	**0.59**	0.68	0.86	0.79	0.93	0.85
Stearate	0.80	1.07	0.75	0.61	0.81	0.76
C20:4	1.15	1.24	0.93	0.64	0.39	1.63
Ceramides	**2W**			**8W**		
Liver	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**
C14	0.89	0.64	1.39	1.38	2.14	0.65
C16	1.06	0.81	**1.30**	0.80	0.82	0.98
C18	1.14	1.25	0.91	1.26	**1.81**	0.70
C20	1.17	1.46	0.81	0.97	1.17	0.82
C22	0.97	**1.86**	**0.52**	1.17	**2.22**	0.53
C23	0.95	1.25	**0.75**	1.15	1.54	0.75
C24:1	0.96	**1.48**	**0.65**	1.04	**1.49**	**0.70**
C24	0.99	1.07	0.93	1.08	1.09	1.00
C25	1.09	**0.63**	**1.73**	0.99	**0.69**	1.43
d18:1/C16	1.09	0.72	**1.52**	1.15	0.73	1.57
d18:1/C22	1.29	1.28	1.01	1.14	1.38	0.82
d18:1/C23	0.97	0.98	0.99	0.90	1.02	0.88
d18:1/C24:1	1.10	1.07	1.03	1.06	1.30	0.81
d18:1/C24	1.27	1.10	1.15	1.09	1.25	0.87
Gastrocnemius						
C14	0.75	0.73	1.04	0.78	1.06	0.73
C16	0.98	1.11	0.89	0.85	0.66	1.29
C18	0.95	1.05	0.90	0.98	0.92	1.06
C20	0.79	0.78	1.01	1.14	0.91	1.25
C22	0.84	0.99	0.85	1.19	1.10	1.07
C23	0.92	1.10	0.83	1.17	0.91	1.28
C24:1	1.13	**2.08**	0.54	1.16	**1.58**	0.73
C24	0.91	1.11	0.82	1.02	0.96	1.06
C25	0.97	**0.44**	2.21	0.86	**0.27**	3.20
d18:1/C16	0.89	0.36	2.47	1.32	0.53	2.49
d18:1/C22	1.92	0.89	2.16	2.87	0.97	2.97
d18:1/C23	1.36	0.82	1.65	2.27	0.87	2.60
d18:1/C24:1	2.05	1.56	1.32	2.06	1.18	1.75
d18:1/C24	2.09	1.03	2.02	2.58	1.10	2.34
Amino Acids	**2W**			**8W**		
Plasma	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**

Gly	0.94	**0.74**	**1.26**	0.93	**0.72**	**1.29**
Ala	**0.74**	1.01	**0.73**	**0.77**	0.93	0.83
Ser	1.00	0.91	1.10	1.12	1.10	1.02
Pro	0.79	1.07	**0.74**	1.01	1.05	0.96
Val	**0.78**	0.99	**0.79**	0.83	1.08	**0.77**
Leu/Ile	**0.77**	0.87	0.89	0.82	0.96	0.85
Met	**0.80**	0.94	0.85	**0.77**	0.90	0.85
His	0.88	**1.20**	**0.74**	0.97	1.11	0.87
Phe	0.92	1.07	0.86	0.96	1.12	0.86
Tyr	0.98	1.35	**0.72**	**0.73**	0.83	0.88
Asx	1.22	**0.65**	**1.88**	0.80	**0.67**	1.20
Glx	**0.83**	0.97	0.86	**0.70**	0.90	**0.78**
Orn	0.59	0.79	0.75	0.92	0.94	0.97
Cit	0.85	0.80	1.06	0.89	0.80	1.12
Arg	1.38	1.07	1.29	1.08	1.14	0.95
Liver						
Gly	1.03	1.07	0.97	1.16	1.12	1.03
Ala	0.67	1.16	**0.57**	**0.51**	1.14	0.45
Ser	0.93	1.00	0.92	1.10	1.15	0.96
Pro	**0.65**	0.88	**0.75**	0.92	1.05	0.87
Val	**0.73**	0.98	**0.74**	0.84	**1.32**	**0.64**
Leu/Ile	**0.65**	**0.74**	0.88	**0.81**	1.02	**0.79**
Met	**0.65**	0.73	0.88	**0.58**	**0.63**	0.92
His	0.96	**1.53**	**0.63**	1.05	**1.53**	**0.68**
Phe	**0.71**	**0.77**	0.93	0.93	0.95	0.98
Tyr	0.81	**0.86**	0.94	0.75	**0.74**	1.02
Asx	1.06	**0.67**	**1.58**	0.86	0.78	1.10
Glx	0.91	0.88	1.03	1.00	0.99	1.01
Orn	0.96	**0.69**	**1.41**	0.95	0.83	1.15
Cit	0.92	0.97	0.95	1.04	1.26	0.82
Arg	1.11	0.90	1.24	0.87	0.96	0.90
Gastrocnemius						
Gly	1.14	0.89	**1.29**	1.40	0.98	**1.43**
Ala	0.88	1.03	0.85	0.93	0.88	1.06
Ser	**1.21**	0.92	**1.31**	**1.42**	1.02	**1.40**
Pro	0.82	0.98	0.84	1.09	0.87	1.26
Val	1.01	1.16	0.87	0.89	0.96	0.93
Leu/Ile	1.03	1.08	0.95	0.98	0.93	1.05
Met	0.93	0.87	1.07	0.93	0.79	1.17
His	**1.52**	**1.28**	1.19	0.98	0.93	1.06
Phe	1.06	1.10	0.97	1.03	0.88	1.17
Tyr	1.05	1.33	0.78	0.92	0.83	1.10
Asx	1.04	1.09	0.96	1.39	0.99	1.40

Glx	1.28	1.00	1.28	1.29	0.96	1.34
Orn	1.16	0.81	**1.43**	**1.42**	1.06	1.34
Cit	1.06	0.94	1.13	1.16	0.85	**1.36**
Arg	**2.03**	**1.50**	1.36	**1.73**	1.26	1.37
Organic Acids		**2W**			**8W**	
Liver	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**
lactate	0.93	1.04	0.89	0.70	0.98	0.72
pyruvate	0.79	0.89	0.89	0.79	0.94	0.84
succinate	0.64	0.81	0.80	0.83	0.92	0.90
fumarate	**1.72**	0.75	**2.28**	0.97	**0.53**	**1.83**
malate	1.58	0.78	**2.03**	1.01	**0.58**	**1.73**
a-KG	1.02	0.91	1.13	0.88	0.97	0.91
citrate	0.68	**0.42**	**1.61**	**0.73**	**0.54**	**1.35**
Gastrocnemius						
lactate	1.27	1.02	1.25	0.91	0.70	1.30
pyruvate	1.14	1.23	0.93	1.31	1.23	1.06
succinate	0.88	1.03	0.85	0.86	0.83	1.03
fumarate	0.93	0.90	1.03	0.84	**0.73**	1.15
malate	0.96	1.00	0.96	0.94	0.80	1.18
a-KG	1.18	1.03	1.15	1.16	1.20	0.96
citrate	0.87	0.88	0.99	0.86	0.82	1.05
Free fatty acids		**2W**			**8W**	
Plasma	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**
C14:0	**0.43**	0.64	0.67	**0.30**	0.44	0.69
C16:1	0.40	0.63	0.63	**0.44**	**0.48**	0.90
C16:0	**0.58**	0.69	0.84	**0.49**	0.62	0.79
αC18:3	**0.62**	0.75	0.83	**0.52**	**0.59**	0.88
C18:2	0.76	0.75	1.01	**0.54**	**0.58**	0.94
C18:0	**0.62**	0.62	1.00	**0.72**	0.67	1.08
C20:4	**0.55**	0.81	**0.68**	**0.62**	0.73	0.84
C18:1	**0.50**	0.67	0.74	**0.48**	0.60	0.80
Total FFA	**0.58**	0.71	0.82	**0.52**	0.61	0.84
Total fatty acids	**2W**			**8W**		
Plasma	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**
C14:0	**0.42**	1.50	**0.28**	**0.41**	1.79	**0.23**
C16:1	**0.54**	0.98	**0.55**	**0.55**	1.05	**0.52**
C16:0	**0.56**	0.98	**0.57**	**0.49**	1.28	**0.38**
C18:2	**0.62**	1.17	**0.53**	**0.58**	1.24	**0.47**
C18:0	0.62	0.92	0.68	**0.58**	1.00	**0.58**
C20:4	**0.52**	0.78	**0.66**	**0.49**	0.93	**0.52**

C20:3	**0.73**	1.08	**0.68**	**0.69**	1.17	**0.59**
C22:6	**0.61**	0.91	**0.67**	**0.59**	0.99	**0.59**
C18:1	**0.46**	0.94	**0.49**	**0.35**	1.10	**0.32**
Total TFA	**0.55**	0.80	**0.70**	**0.49**	0.88	**0.56**
Conventional Metabolites and Hormones	**2W**			**8W**		
Plasma	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**	**HF/FG : HF**	**HF/FG : HF/PF**	**HF/PF : HF**
CHOL	**0.63**	0.96	**0.65**	**0.62**	1.03	**0.60**
HDL	**0.70**	0.98	**0.71**	0.70	1.21	**0.58**
TRIG	**0.51**	1.12	**0.45**	**0.39**	1.22	**0.32**
Glycerol	**0.56**	0.78	0.72	**0.24**	0.50	**0.47**
NEFA	0.66	0.81	0.81	**0.44**	0.64	0.69
KET	1.45	0.69	**2.11**	1.09	0.75	1.44
HBUT	1.36	0.69	**1.97**	1.14	0.77	1.47
CREA	0.82	1.05	0.78	**0.76**	0.95	0.80
ADIPONEC	**0.68**	0.80	0.85	1.13	1.12	1.00
ALB	0.93	1.02	0.91	0.91	1.02	**0.89**
ALT	0.58	0.82	0.70	0.56	0.74	0.75
AST	**0.49**	0.77	**0.64**	0.60	0.66	0.90
LAC	1.03	1.47	0.70	0.68	1.02	0.66
CRP	0.91	0.85	1.06	**0.73**	**0.68**	1.07
Pyruvate	**0.41**	**2.46**	**0.17**	0.49	0.65	0.76
FGF21	0.73	1.30	0.56	0.44	1.35	**0.33**
FGF-15	1.10	0.64	1.72			0.97
GLU	0.93	**1.31**	**0.71**	0.86	1.32	**0.65**
INS	0.66	1.45	**0.46**	0.52	1.07	0.48
HOMA	0.62	1.85	0.34	**0.44**	1.40	**0.32**

Supplemental Table 3

A. List of significant indicator species identified in fecal samples from gnotobiotic mice collected 2 days after colonization

		A term (abundance based)		B term (occurence based)		
97% OTU	**Taxonomy**	**Donor 15 (HF/FG)**	**Donor 23 (HF/PF)**	**Donor 15 (HF/FG)**	**Donor 23 (HF/PF)**	**p value (fdr corrected)**
830080	*Firmicutes*	0.0242	0.9758	0.8	1	0.0179
838281	*Acetivibrio ethanolgignens*	0.1199	0.8801	0.8	1	0.0263
556126	*Bacteroides massiliensis*	1	0	1	0	0.0095
329274	*Clostridiales*	0.0021	0.9979	0.4	1	0.0267
582691	*Clostridium*	0	1	0	1	0.0095
555945	*Bacteria*	0.0907	0.9093	1	1	0.0182
342504	*Clostridiales*	0.1067	0.8933	0.4	1	0.0351
409686	*Lachnospiraceae*	1	0	1	0	0.0095
584241	*Enterococcus*	0.772	0.228	1	1	0.0095
577406	*Bacteria*	0.0174	0.9826	0.8	1	0.0191
362037	*Lachnospiraceae*	0	1	0	1	0.0095
322087	*Clostridiales*	0	1	0	1	0.0095
355291	*Bacteroides caccae*	0.998	0.002	1	0.25	0.0095
589071	*Bacteroides*	1	0	1	0	0.0095
296726	*Bacteria*	0.0545	0.9455	0.8	1	0.0191
546876	*Clostridiales*	1	0	1	0	0.0095
839200	*Bacteria*	0.1906	0.8094	0.8	1	0.0348
276149	*Parabacteroides goldsteinii*	1	0	1	0	0.0095
759751	*Bacteria*	0.0153	0.9847	0.8	1	0.0191
696563	*Blautia producta*	0.3391	0.6609	1	1	0.0179
584083	*Bacteria*	0	1	0	1	0.0095
585914	*Parabacteroides distasonis*	1	0	1	0	0.0095
589277	*Bacteroides*	1	0	1	0	0.0095
277143	*Clostridium sp id4*	0.8136	0.1864	1	0.75	0.0237
535375	*Bacteroides*	1	0	1	0	0.0095
1111294	*Enterobacteriaceae*	1	0	1	0	0.0095
1111582	*Enterococcus*	0.7794	0.2206	1	1	0.0179
360730	*Porphyromonadaceae*	1	0	1	0	0.0095
309720	*Subdoligranulum sp 4 3 54a2faa*	0.8628	0.1372	1	0.75	0.0095
455746	*Clostridiales*	1	0	1	0	0.0095
359872	*Bilophila wadsworthia*	1	0	1	0	0.0095
(New reference OTU) 10006	*Bacteroides caccae*	1	0	1	0	0.0095
(New reference OTU) 36942	*Clostridiales*	1	0	1	0	0.0095

B. List of significant indicator species identified in fecal samples from gnotobiotic mice collected 5 days after colonization

		A term (abundance based)		B term (occurence based)		
97% OTU	**Taxonomy**	**Donor 15 (HF/FG)**	**Donor 23 (HF/PF)**	**Donor 15 (HF/FG)**	**Donor 23 (HF/PF)**	**p value (fdr corrected)**
328536	*Lachnospiraceae*	1	0	1	0	0.008
556126	*Bacteroides massiliensis*	1	0	1	0	0.008
329274	*Clostridiales*	0	1	0	1	0.008
555945	*Bacteria*	0.0095	0.9905	0.4	1	0.008
342504	*Clostridiales*	0.0924	0.9076	0.8	1	0.008
336691	*Clostridiales*	0	1	0	1	0.008
4462541	*Clostridiales*	0	1	0	1	0.008
716006	*Lactococcus lactis*	0.4092	0.5908	1	1	0.0164
409686	*Lachnospiraceae*	1	0	1	0	0.008
362037	*Lachnospiraceae*	0.0051	0.9949	0.2	1	0.008
355291	*Bacteroides caccae*	0.9572	0.0428	1	0.2	0.008
296726	*Bacteria*	0.0533	0.9467	1	1	0.008
276149	*Parabacteroides goldsteinii*	1	0	1	0	0.008
434339	*Lachnospiraceae*	0.0469	0.9531	0.4	1	0.0172
577377	*Bacteroides*	1	0	1	0	0.008
406247	*Lachnospiraceae*	0.0414	0.9586	0.4	1	0.0172
319909	*Clostridiales*	0	1	0	1	0.008
846464	*Firmicutes*	0	1	0	1	0.008
584083	*Bacteria*	0	1	0	1	0.008
585914	*Parabacteroides distasonis*	1	0	1	0	0.008
589277	*Bacteroides*	1	0	1	0	0.008
279026	*Clostridiales*	0	1	0	1	0.008
413275	*Bacteria*	0.9819	0.0181	1	0.2	0.008
455746	*Clostridiales*	1	0	1	0	0.008
330772	*Bacillus sp b17 425093*	1	0	1	0	0.008
271476	*Clostridiales*	0.0116	0.9884	0.2	1	0.008
363731	*Akkermansia muciniphila*	1	0	1	0	0.008
359872	*Bilophila wadsworthia*	1	0	1	0	0.008
(New reference OTU) 11005	*Clostridium celatum*	0.1612	0.8388	1	1	0.008
(New reference OTU) 36942	*Clostridiales*	1	0	1	0	0.008

C. List of significant indicator species identified in fecal samples from gnotobiotic mice collected 7 days after colonization

		A term (abundance based)		B term (occurence based)		
97% OTU	**Taxonomy**	**Donor 15 (HF/FG)**	**Donor 23 (HF/PF)**	**Donor 15 (HF/FG)**	**Donor 23 (HF/PF)**	**p value (fdr corrected)**
328536	*Lachnospiraceae*	1	0	1	0	0.0097
556126	*Bacteroides massiliensis*	1	0	1	0	0.0097
555945	*Bacteria*	0.0422	0.9578	1	1	0.0097
342504	*Clostridiales*	0.0372	0.9628	0.8	1	0.0097
336691	*Clostridiales*	0	1	0	1	0.0097
4462541	*Clostridiales*	0	1	0	1	0.0097
336276	*Lachnospiraceae*	1	0	1	0	0.0097
355291	*Bacteroides caccae*	0.9893	0.0107	1	0.2	0.0097
296726	*Bacteria*	0.0301	0.9699	1	1	0.0097
276149	*Parabacteroides goldsteinii*	1	0	1	0	0.0097
577377	*Bacteroides*	1	0	1	0	0.0097
406247	*Lachnospiraceae*	0.0662	0.9338	0.4	1	0.018
319909	*Clostridiales*	0	1	0	1	0.0097
584083	*Bacteria*	0	1	0	1	0.0097
585914	*Parabacteroides distasonis*	1	0	1	0	0.0097
589277	*Bacteroides*	1	0	1	0	0.0097
279026	*Clostridiales*	0	1	0	1	0.0097
1517779	*Alistipes*	1	0	1	0	0.0097
113417	*desulfovibrionaceae bacterium*	1	0	1	0	0.0097
360730	*Porphyromonadaceae*	1	0	1	0	0.0097
330772	*Bacillus sp b17 425093*	1	0	1	0	0.0097
264325	*Alistipes*	1	0	1	0	0.0097
359872	*Bilophila wadsworthia*	1	0	1	0	0.0097

D. List of significant indicator species identified in cecal samples from gnotobiotic mice collected 7 days after colonization

		A term (abundance based)		B term (occurence based)		
97% OTU	**Taxonomy**	**Donor 15 (HF/FG)**	**Donor 23 (HF/PF)**	**Donor 15 (HF/FG)**	**Donor 23 (HF/PF)**	**p value (fdr corrected)**
328536	*Lachnospiraceae*	1	0	1	0	0.0071
331772	*Aeromonas sp gistwp2w2*	1	0	1	0	0.0071
556126	*Bacteroides massiliensis*	1	0	1	0	0.0071
277329	*Clostridiales*	0.0959	0.9041	0.8	1	0.0234
555945	*Bacteria*	0.0324	0.9676	0.8	1	0.0071
342504	*Clostridiales*	0.0905	0.9095	1	1	0.0163
336691	*Clostridiales*	0	1	0	1	0.0071
4462541	*Clostridiales*	0	1	0	1	0.0071
336276	*Lachnospiraceae*	1	0	1	0	0.0071
355291	*Bacteroides caccae*	0.9847	0.0153	1	0.2	0.0071
354163	*Clostridium sp culture41*	1	0	1	0	0.0071
296726	*Bacteria*	0.0128	0.9872	0.8	1	0.0071
276149	*Parabacteroides goldsteinii*	1	0	1	0	0.0071
434339	*Lachnospiraceae*	0.0439	0.9561	0.4	1	0.0071
577377	*Bacteroides*	1	0	1	0	0.0071
272175	*Bacteria*	0.2047	0.7953	1	1	0.0154
406247	*Lachnospiraceae*	0.0466	0.9534	0.4	1	0.0071
319909	*Clostridiales*	0	1	0	1	0.0071
584083	*Bacteria*	0	1	0	1	0.0071
585914	*Parabacteroides distasonis*	1	0	1	0	0.0071
589277	*Bacteroides*	1	0	1	0	0.0071
279026	*Clostridiales*	0	1	0	1	0.0071
1136443	*Mucispirillum schaedleri*	1	0	1	0	0.0071
263380	*Lachnospiraceae*	1	0	1	0	0.0071
1517779	*Alistipes*	1	0	1	0	0.0071
113417	*desulfovibrionaceae bacterium*	1	0	1	0	0.0071
360730	*Porphyromonadaceae*	1	0	1	0	0.0071
953855	*Alistipes finegoldii*	1	0	1	0	0.0071
330772	*Bacillus sp b17 425093*	1	0	1	0	0.0071
264325	*Alistipes*	1	0	1	0	0.0071
271476	*Clostridiales*	0	1	0	1	0.0071
363731	*Akkermansia muciniphila*	1	0	1	0	0.0071
359872	*Bilophila wadsworthia*	1	0	1	0	0.0071

Supplemental Table 4. Primer information used in Quantitative RT-PCR

Taqman primer sets purchased from Thermo Scientific		
Gene	Rat Taqman ID	Mouse Taqman ID
Bmal1 (Arntl)	Rn00577590_m1	Mm00500226_m1
Clock	Rn0573120_m1	Mm00455950_m1
Per1	Rn01325256_m1	
Fgf21	Rn04219642_g1	Mm00840165_g1
Cel	Rn00566497_m1	Mm00486975_m1
Clps	Rn00824539-m1	Mm00517960_m1
Pnlip	Rn00565851_m1	Mm00813468_m1
Pnliprp2	Rn00589467_m1	Mm00448214_m1
Ppib	Rn03302274_m1	Mm00478295_m1
Rps9	Rn04223965_g1	Mm00850060_s1