Supplemental Table 1
Fatty acid composition of experimental diets fed to Ossabaw pigs†

Fatty acids	Control Diet			Atherogenic Diet			M-Ath Diet			ANOVA P value
5:0	n.d.[b]	±	n.d.	n.d.[b]	±	n.d.	0.18[a]	±	0.05	0.0002
7:0	n.d.[b]	±	n.d.	n.d.[b]	±	n.d.	2.32[a]	±	0.49	<.0001
8:0	n.d.	±	n.d.	0.08	±	0.15	0.58	±	1.01	0.47
10:0	n.d.[b]	±	n.d.	n.d.[b]	±	n.d.	1.79[a]	±	0.46	0.0002
12:0	0.01[b]	±	0.02	0.07[b]	±	0.03	13.46[a]	±	2.76	<.0001
14:0	0.15[b]	±	0.04	0.14[b]	±	0.04	5.21[a]	±	0.34	<.0001
15:0	0.03	±	0.03	n.d.	±	n.d.	n.d.	±	n.d.	0.09
16:0	14.22	±	1.75	11.86	±	0.79	13.53	±	0.56	0.11
16:1t	0.17[a]	±	0.01	0.02[c]	±	0.03	0.09[b]	±	0.01	0.001
16:1n7	0.25[b]	±	0.03	0.16[c]	±	0.03	0.50[a]	±	0.02	<.0001
17:0	0.07	±	0.06	0.13	±	0.01	0.14	±	0.01	0.01
18:0	2.62[c]	±	0.15	14.39[a]	±	0.21	10.09[b]	±	0.81	<.0001
18:1t	n.d.[c]	±	n.d.	9.37[a]	±	0.55	4.46[b]	±	0.26	<.0001
18:1n9	21.26[c]	±	0.61	35.57[a]	±	0.79	27.44[b]	±	2.10	<.0001
18:1n7	0.95[c]	±	0.03	6.21[a]	±	0.21	3.82[b]	±	0.29	<.0001
18:1	n.d[c].	±	n.d.	4.70[a]	±	0.19	2.72[b]	±	0.20	<.0001
18:2n6	54.45[a]	±	0.70	12.02[b]	±	0.75	9.77[c]	±	0.60	<.0001
18:3n3	4.78[a]	±	0.06	0.62[c]	±	0.09	0.90[b]	±	0.05	<.0001
20:0	0.29	±	0.07	0.31	±	0.02	0.22	±	0.02	0.08
20:1n9	0.20[a]	±	0.05	0.08[b]	±	0.01	0.21[a]	±	0.02	0.004
20:2n6	0.02[b]	±	0.03	n.d.[b]	±	n.d.	0.12[a]	±	0.02	0.001
20:4n6	n.d.	±	n.d.	n.d.	±	n.d.	0.03	±	0.03	0.08
22:0	0.23	±	0.06	0.22	±	0.09	0.16	±	0.02	0.38
22:1n9	0.10	±	0.08	n.d.	±	n.d.	n.d.	±	n.d.	0.08
TOTS	17.63[c]	±	1.50	27.21[b]	±	0.84	47.68[a]	±	3.69	<.0001
TOTM	22.92[c]	±	0.68	56.10[a]	±	1.42	39.23[b]	±	2.87	<.0001
PUFA	59.25[a]	±	0.80	12.64[b]	±	0.85	10.82[b]	±	0.69	<.0001
n-6 PUFA	54.47[a]	±	0.73	12.02[b]	±	0.75	9.93[c]	±	0.64	<.0001
n-3 PUFA	4.78[a]	±	0.06	0.62[c]	±	0.09	0.90[b]	±	0.05	<.0001
TOTS/TOTM	0.77[b]	±	0.09	0.49[b]	±	0.03	1.22[a]	±	0.19	0.0009
TOTM/PUFA	0.39[c]	±	0.01	4.46[a]	±	0.41	3.62[b]	±	0.05	<.0001
TOTS/PUFA	0.30[c]	±	0.03	2.16[b]	±	0.11	4.43[a]	±	0.65	<.0001
n-6/n-3	11.41[b]	±	n.d.	19.71[a]	±	1.80	11.06[b]	±	0.08	<.0001

Values in rows with different superscript letters are significantly different by one-way ANOVA. The superscripts indicate what mean values are different in the rows and the P values are for all groups. n = 3 for Control Diet, Atherogenic and M-Ath diets. Fructose diet not analyzed.

Supplemental Table 2
Correlation of fatty acid composition among diet, serum and liver samples

	Serum level		Liver level	
	r	**p-val**	*r*	**p-val**
Diet SFA	-0.248	0.5	-0.27	0.47
Diet TFA	0.34	0.3	0.59	0.09
Diet MUFA	0.77	0.01	0.92	< .001
Diet PUFA	0.95	< .001	0.98	< .001
Diet n-6 PUFA	0.95	< .001	0.99	< .001
Diet n-3 PUFA	0.88	0.002	0.59	0.09
Diet n-6/n-3	0.51	0.15	-0.10	0.79

	Liver level	
	r	**p-val**
Serum SFA	0.84	< .001
Serum TFA	0.32	0.047
Serum MUFA	0.84	< .001
Serum PUFA	0.84	< .001
Serum n-6 PUFA	0.82	< .001
Serum n-3 PUFA	0.89	< .001
Serum n-6/n-3	0.88	< .001

SFA: Saturated Fatty Acids, TFA: Trans Fatty Acids, MUFA: Monounsaturated Fatty Acids, PUFA: Polyunsaturated Fatty Acids.

Supplemental Table 3
Selected characteristics at sacrifice of gender–matched pigs belonging to different study groups†

	Control chow group (n = 9)	Atherogenic group (n = 8)	M-ATG group (n = 7)
Gender (M/F)	0/9	0/8	0/7
Weight at sacrifice (kg)	50.6 ±6.1	89.9 ±12.3[a]	87.2 ±12.6[a]
Mean weight gain (kg)	13.0 ±3.5	47.1 ±14.6[a]	37.7 ±11.8[a]
Body circumference at sac (cm)	81.5 ±4.5	115.4 ±1.9[a]	121.9 ±9.2[a,b]
Serum Chemistry Profile			
AST (IU/L)	32 ±3	27 ±2	100 ±18[a,b]
ALT (IU/L)	46 ±8	32 ±2	41 ±10
Alkaline Phos (IU/L)	57 ±5	100 ±14[a]	273 ±96[a]
Bilirubin (mg/dL)	0.2 ±0.02	0.2 ±0.03	0.3 ±0.04
Serum glycemic measures			
Glucose, fasting (mg/dL)	75.6 ±2.5	85.9 ±2.8[a]	87.4 ±5.2[a]
Insulin, fasting serum ±mg/dL	11 ±2	14 ±1	18 ±3
HOMA	2.1 ± 0.3	2.9 ± 0.4	3.9 ± 0.7
Plasma Lipids			
Cholesterol (mg/dL)	81.7 ±3.2	375.3 ±39.6[a]	643.2 ±67.2[a,b]
Triglycerides (mg/dL)	25.5 ±3.3	37.5 ±2.4[a]	120.3 ±18.3[a,b]
LDL (mg/dL)	32.9 ±4.0	195.9 ±52.0[a]	533.8 ±63.9[a,b]
HDL (mg/dL)	43.6 ± 4.0	65.6 ±12.9[a]	85.3 ±5.5[a]
NEFA (serum) (mmol/L)	0.48 ± 0.18	0.96 ±0.176	1.03 ± 0.32
Serum Hormones			
Adiponectin, serum (qauc)Ψ	16273 ±1530	13359 ±813	13296 ±663
Leptin, serum (ng/dL)	2 ±0.2	4 ±1[a]	17 ±4[a,b]
TNF-α, serum (pg/mL)	46.0 ±5.5	38.8 ±2.2	72.9 ±19.5[b]
Serum MDA (uM)	1.50 ±0.11	2.05 ±0.32[a]	3.00 ±1.17

†Data shown as mean ± s.e. [a] $p<0.05$ when compared to Control Chow group, [b]$p<0.05$ when compared to atherogenic diet group. Ψ Expressed as protein intensity. AST: Aspartate aminotransferase, ALT: Alanine aminotransferase, HOMA: Homeostatic Model Assessment Method, LDL: Low density lipoprotein, HDL: High density lipoprotein, NEFA: Non-esterified fatty acids, TNFα: Tumor necrosis factor-α, MDA: Malondialdehyde

Supplemental Table 4
Triglyceride, MDA and TEAC Measurements in Liver Tissue of gender-matched pigs†

	Control (n = 9)	Atherogenic diet (n = 8)	M-Ath (n = 7)
Triglycerides (ug/mg protein)	52 ±4	121 ±29[a]	110 ±19[a]
MDA (nmol/pg)	0.23 ±0.01	0.42 ±0.07	0.56 ±0.08[a]
TEAC (umol/mg protein)	0.27 ±0.01	0.30 ±0.01	0.33 ±0.01[a]
MDA/TEAC	0.83 ±0.18	1.42 ±0.21	1.67 ±0.21[a]

†Values represent means (s.e.). MDA: Malondialdehyde, TEAC: Trolox Equivalent Antioxidant Capacity. [a]$p<0.05$ when compared to Control group, [b]$p<0.05$ when compared to Atherogenic group.