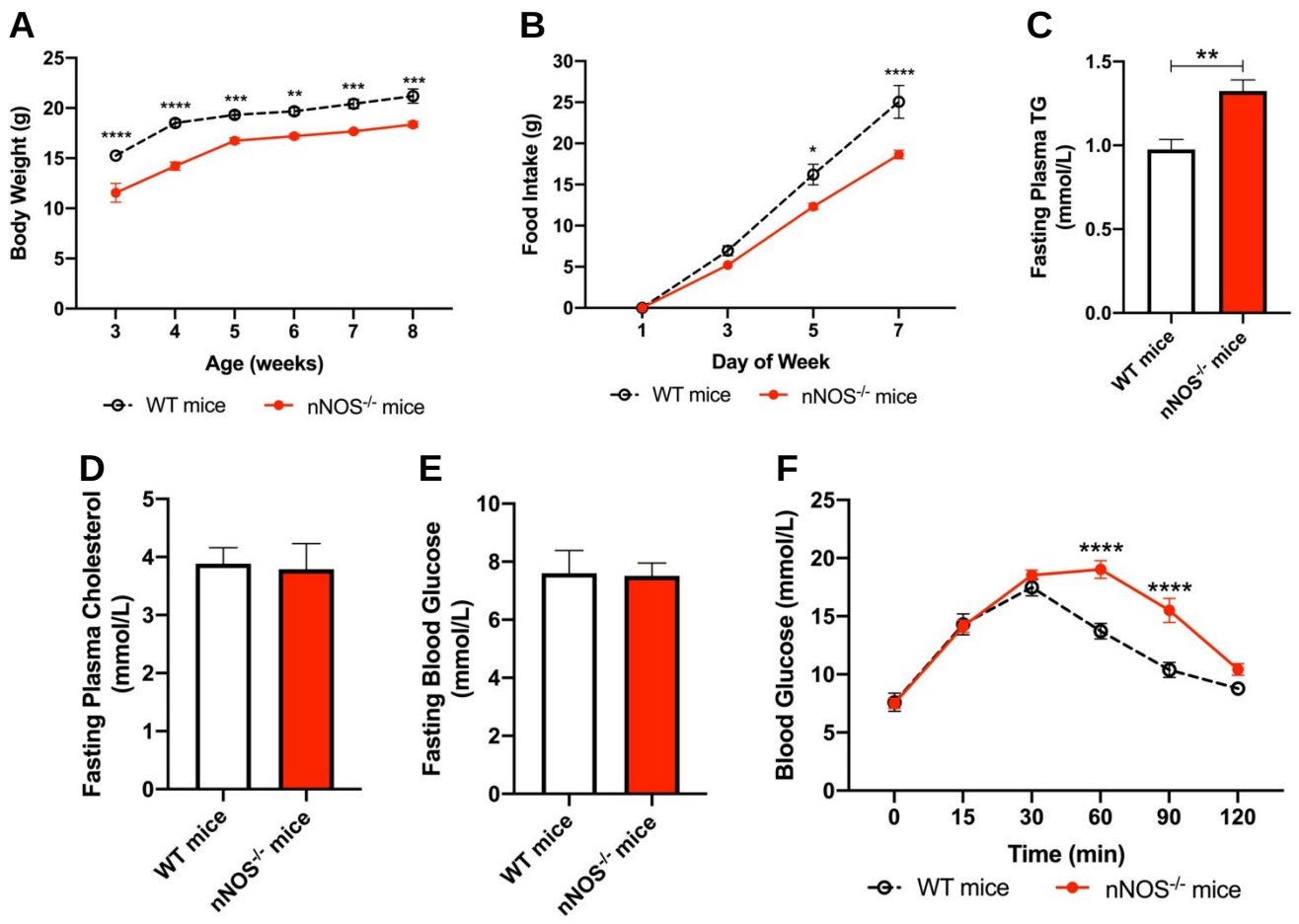
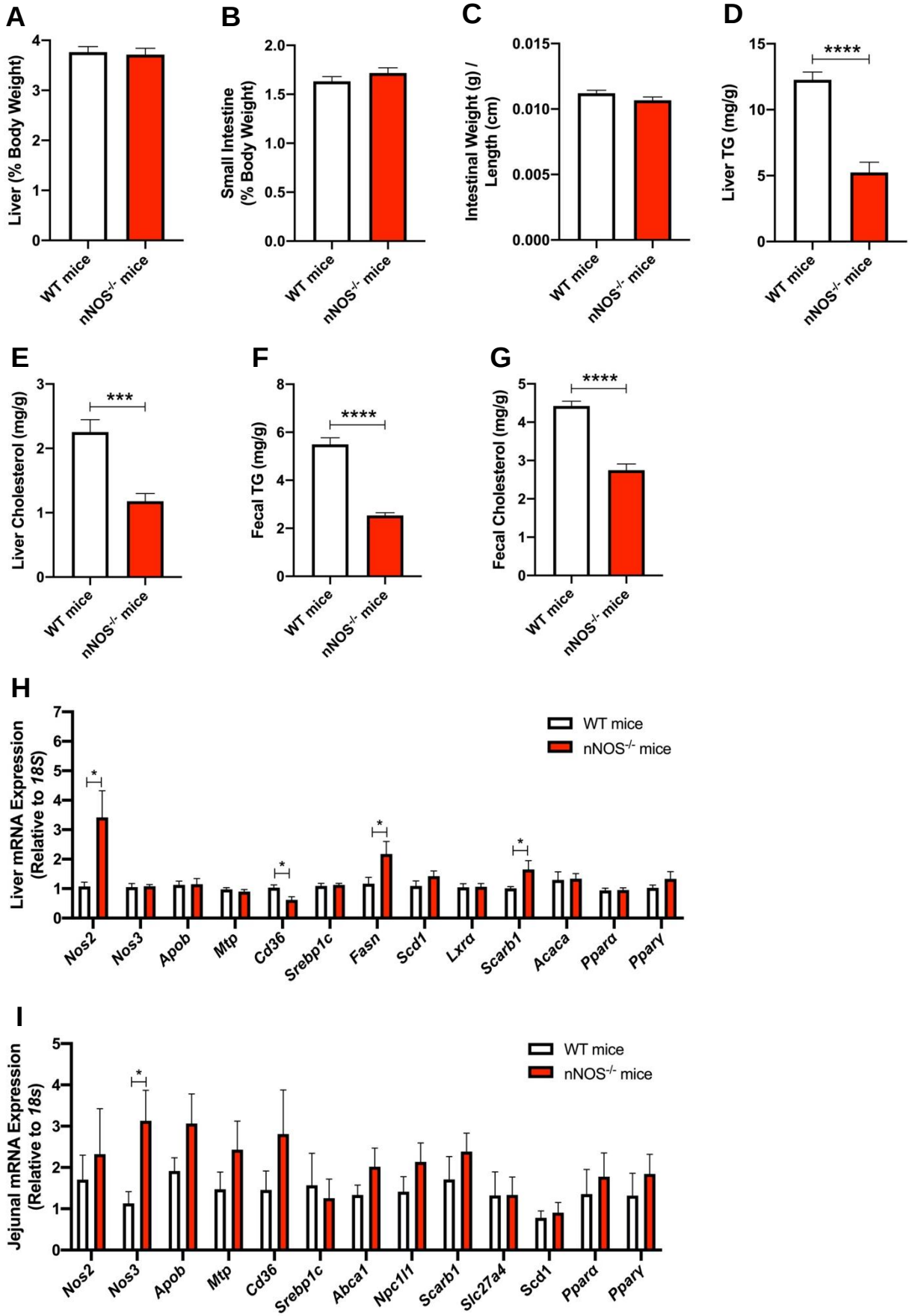
Supplemental Table 1: Primer Sequences used for Quantitative Real-Time PCR

Gene	Forward	Reverse
abca1 **(ABCA1)**	gcttgttggcctcagttaagg	gtagctcaggcgtacagagat
acaca **(ACC)**	gtccccagggatgaaccaata	gccatgctcaaccaaagtagc
apob **(APOB)**	aaacatgcagagctactttggag	tttaggatcacttcctggtcaaa
cd36 **(CD36)**	atgggctgtgatcggaactg	gtcttcccaataagcatgtctcc
fasn **(FAS)**	tcaactcactggcagaagagaa	ccagagggtggttgttagaaag
mtp **(MTP)**	tggtgaaagggcttattctgtt	ttgcagctgaatatcctgagaa
nos2 **(iNOS)**	tcctggacattacgacccct	ctctgagggctgacacaagg
nos3 **(eNOS)**	ccaccctctctgaagaatgcc	agcaggatgccctaactacc
npc1l1 **(NPC1L1)**	tgtttggtatggagagtgtgga	gtcacagcagagactgacattg
nr1c1 **(PPARα)**	atgccagtactgccgttttc	ccgaatctttcaggtcgtgt
nr1c3 **(PPARγ)**	cctcaggtcagagtcgccc	ttgtcgtcacactcggtcc
nr1h3 **(LXRα)**	tgccatcagcatcttctctg	ggctcaccagcttcattagg
scarb1 **(SR-B1)**	tttggagtggtagtaaaaagggc	tgacatcagggactcagagtag
scd1 **(SCD1)**	acatgtctgacctgaaaagctga	gtacctcctctggaacatcacc
slc27a4 **(FATP4)**	taagtccctgcccctttgtacaca	gatgaagacccggatgaaacg
srebp1c **(SREBP-1c)**	acagtccagcctttgaggatag	gacacagaaaggccagtacaca
18s **(18S)**	taagtccctgcccctttgtacaca	gatccgagggcctcactaaac



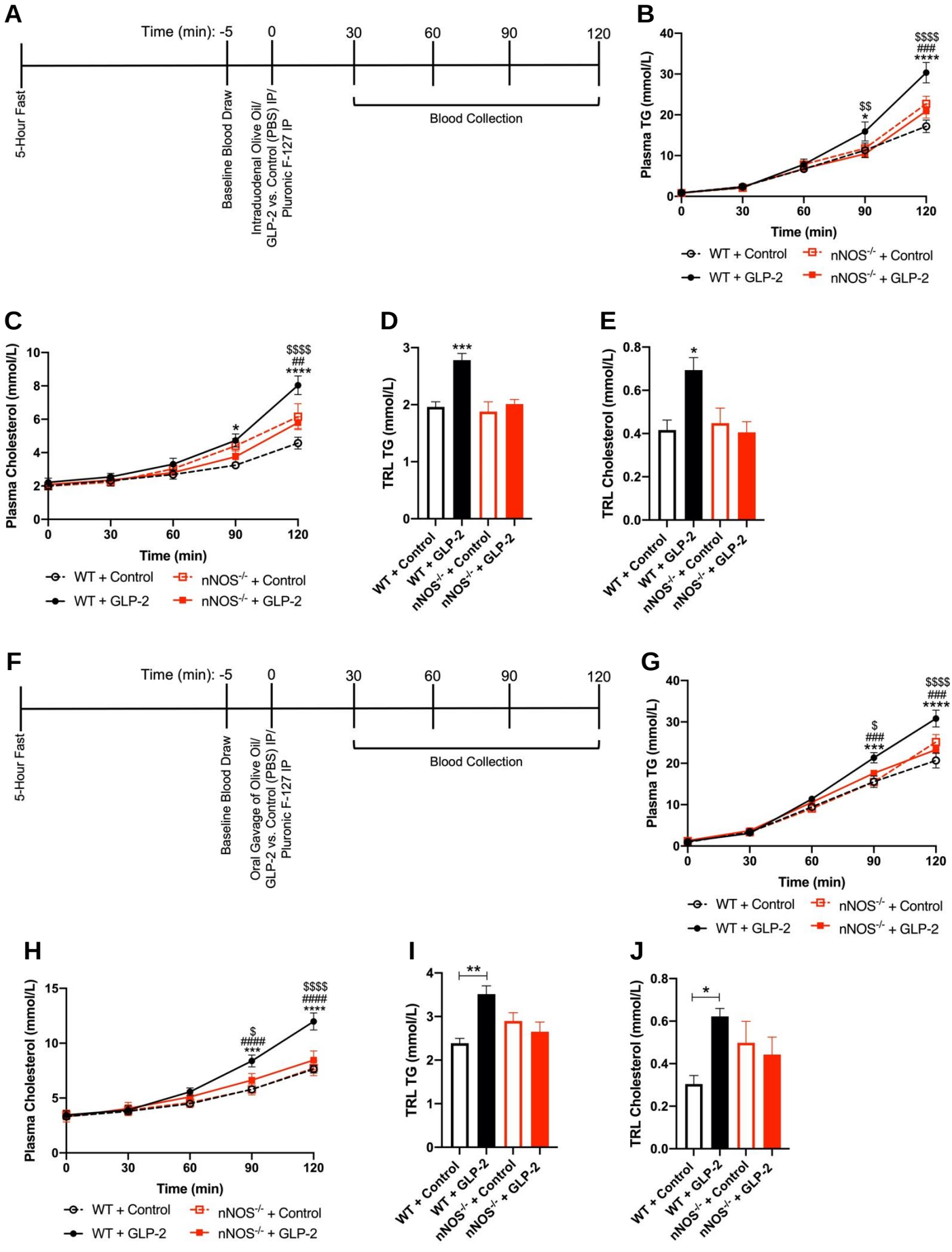
Supplemental Figure 1. Female nNOS$^{-/-}$ mice display differences in lipid and glucose metabolism compared to WT control mice.

(**A**) Body weight gain of chow-fed female nNOS$^{-/-}$ and WT mice were monitored weekly from weaning (3 weeks of age) to 8 weeks of age. At 8 weeks of age, (**B**) total food intake was monitored over the course of this week (n=8-9 per group). Fasting plasma (**C**) triglycerides (TG) and (**D**) cholesterol of 8-12-week-old, chow-fed female nNOS$^{-/-}$ and WT mice that were fasted for 5 hours (n=8-10 per group). (**E**) Blood glucose of 8-week-old, chow-fed female nNOS$^{-/-}$ and C57BL/6J (WT) mice that were fasted for 5 hours. Corresponding (**F**) oral glucose tolerance tests (OGTTs) (n=8 per group). Data are presented as the mean ± SEM. *, $p<0.05$, **, $p<0.01$, ***, $p<0.001$ and ****$p<0.0001$ WT vs. nNOS$^{-/-}$ mice, as determined by two-way ANOVA with the Bonferroni post hoc test (**A**-**B**, **F**) and Student's unpaired *t*-test (**C**-**E**).


A
Liver (% Body Weight)
WT mice
nNOS-/- mice
B
Small Intestine (% Body Weight)
C
Intestinal Weight (g) / Length (cm)
D
Liver TG (mg/g)
****
E
Liver Cholesterol (mg/g)
***
F
Fecal TG (mg/g)
G
Fecal Cholesterol (mg/g)
H
Liver mRNA Expression (Relative to 18S)
Nos2
Nos3
Apob
Mtp
Cd36
Srebp1c
Fasn
Scd1
Lxrα
Scarb1
Acaca
Pparα
Pparγ
I
Jejunal mRNA Expression (Relative to 18s)
Abca1
Npc1l1
Slc27a4

Supplemental Figure 2. Female nNOS$^{-/-}$ mice display decreased hepatic lipid deposition and fecal lipid output compared to WT control mice.

Non-fasted tissues were extracted and measured from 8-12-week-old female nNOS$^{-/-}$ and WT mice 2 hours after an oral fat load. (**A**) Liver and (**B**) small intestinal weight as a percentage of total body weight. (**C**) Small intestinal weight per centimeter of intestinal length (n=8-9 per group). (**D**-**E**) Hepatic and (**F**-**G**) fecal lipid content (n=6-8 per group). TG, triglycerides. (**H**) Hepatic and (**G**) jejunal mRNA expression, relative to *18s*, of nitric oxide synthase (NOS) isoform and lipid metabolism genes (n=8 per group). Data are presented as the mean ± SEM. *, $p<0.05$, ***, $p<0.001$, ****, $p<0.0001$ WT vs. nNOS$^{-/-}$ mice, as determined by Student's unpaired *t*-test (**A**-**I**).


A
Time (min): -5
0
30
60
90
120
5-Hour Fast
Baseline Blood Draw
Intraduodenal Olive Oil/ GLP-2 vs. Control (PBS) IP/ Pluronic F-127 IP
Blood Collection
B
Plasma TG (mmol/L)
Time (min)
WT + Control
nNOS-/- + Control
WT + GLP-2
nNOS-/- + GLP-2
C
Plasma Cholesterol (mmol/L)
Time (min)
D
TRL TG (mmol/L)
E
TRL Cholesterol (mmol/L)
F
Time (min): -5
0
30
60
90
120
5-Hour Fast
Baseline Blood Draw
Oral Gavage of Olive Oil/ GLP-2 vs. Control (PBS) IP/ Pluronic F-127 IP
Blood Collection
G
Plasma TG (mmol/L)
Time (min)
H
Plasma Cholesterol (mmol/L)
Time (min)
I
TRL TG (mmol/L)
J
TRL Cholesterol (mmol/L)

Supplemental Figure 3. GLP-2-mediated increases in postprandial plasma lipid absorption and CM secretion are abolished in female nNOS$^{-/-}$ mice.

(**A**) Experimental timeline. 8-12-week-old, female WT and nNOS$^{-/-}$ mice were fasted for 5 hours prior to baseline blood collection. Mice received an intraduodenal injection of olive oil and were treated with GLP-2 (0.25mg/kg, IP) or vehicle (PBS), followed by Pluronic F-127 (500mg/kg, IP) to inhibit peripheral TRL catabolism. Blood samples were collected via the tail vein every 30 minutes for 120 minutes. Postprandial plasma (**B**) triglyceride (TG) and (**C**) cholesterol accumulation over 120 minutes. Postprandial TRL (**D**) TG and (**E**) cholesterol accumulation at 120 minutes. (**F**) Experimental timeline. 8-12-week-old, female WT and nNOS$^{-/-}$ mice were fasted for 5 hours prior to baseline blood collection. Mice received an oral fat load of olive oil and were treated with GLP-2 (0.25mg/kg, IP) or vehicle (PBS), followed by Pluronic F-127 (500mg/kg, IP). Blood samples were collected via the tail vein every 30 minutes for 120 minutes. Postprandial plasma (**G**) TG and (**H**) cholesterol accumulation over 120 minutes. Postprandial TRL (**I**) TG and (**J**) cholesterol accumulation at 120 minutes. n=6-10 per group for all panels. Data are presented as the mean ± SEM. *, $p<0.05$, **, $p<0.01$, ***, $p<0.001$ and ****, $p<0.0001$ WT + GLP-2 vs. WT + Control, #, $p<0.05$, ##, $p<0.01$, ###, $p< 0.001$ and ####, $p<0.0001$ WT + GLP-2 vs. nNOS$^{-/-}$ + Control, $, $p<0.05$, $$, $p<0.01$, $$$, $p<0.001$ and $$$$, $p<0.0001$ WT + GLP-2 vs. nNOS$^{-/-}$ + GLP-2, as determined by two-way ANOVA (**B, C, G, H**) and one-way ANOVA (**I, J**) with Bonferroni post hoc test. *, $p<0.05$ and ***, $p<0.001$ WT + GLP-2 vs. WT + Control, nNOS$^{-/-}$ + Control, and nNOS$^{-/-}$ + GLP-2, as determined by one-way ANOVA with the Bonferroni post hoc test (**D, E**).