

SUPPLEMENTARY INFORMATION:

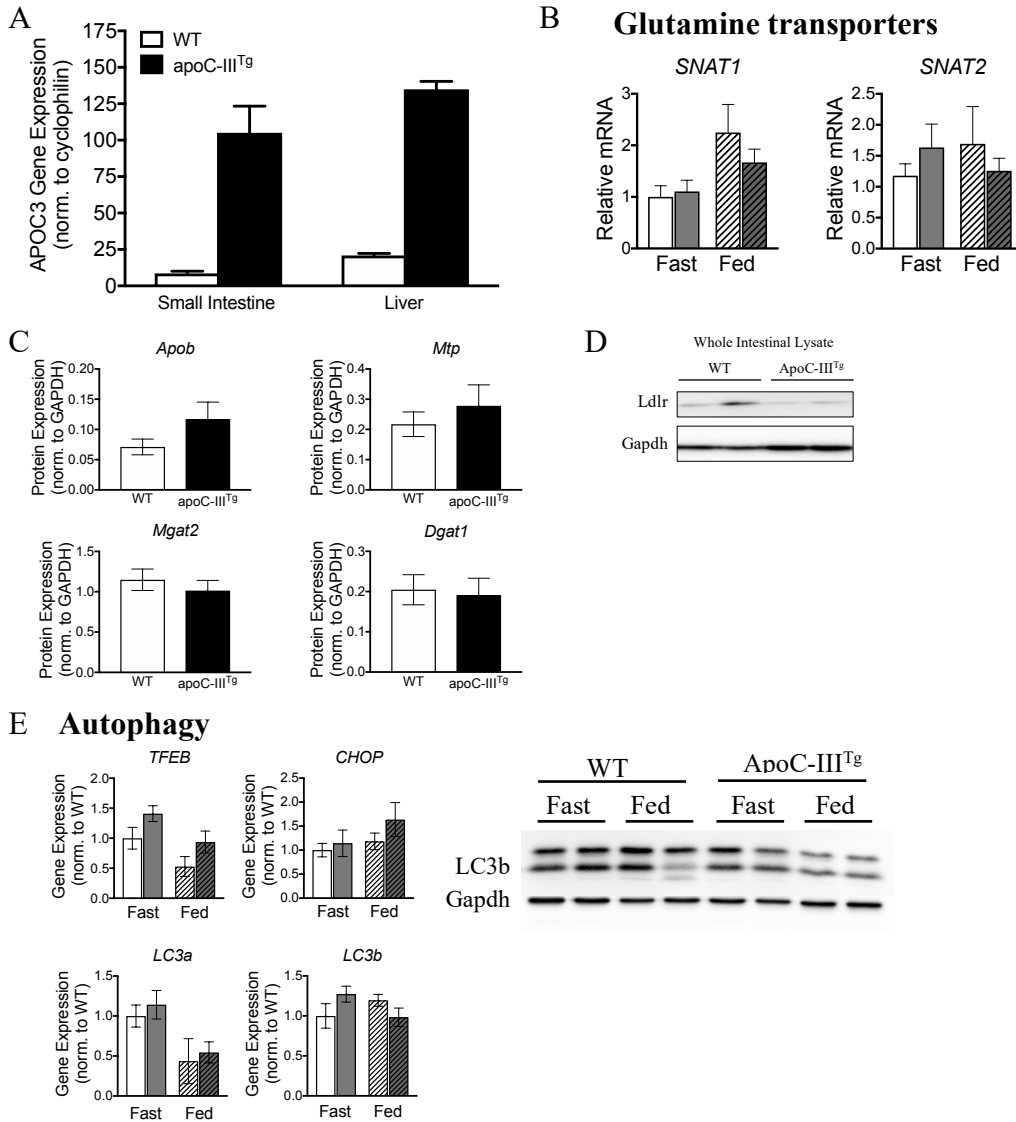
Intestinal basolateral lipid substrate transport (BLST) is linked to chylomicron secretion and is regulated by apoC-III.

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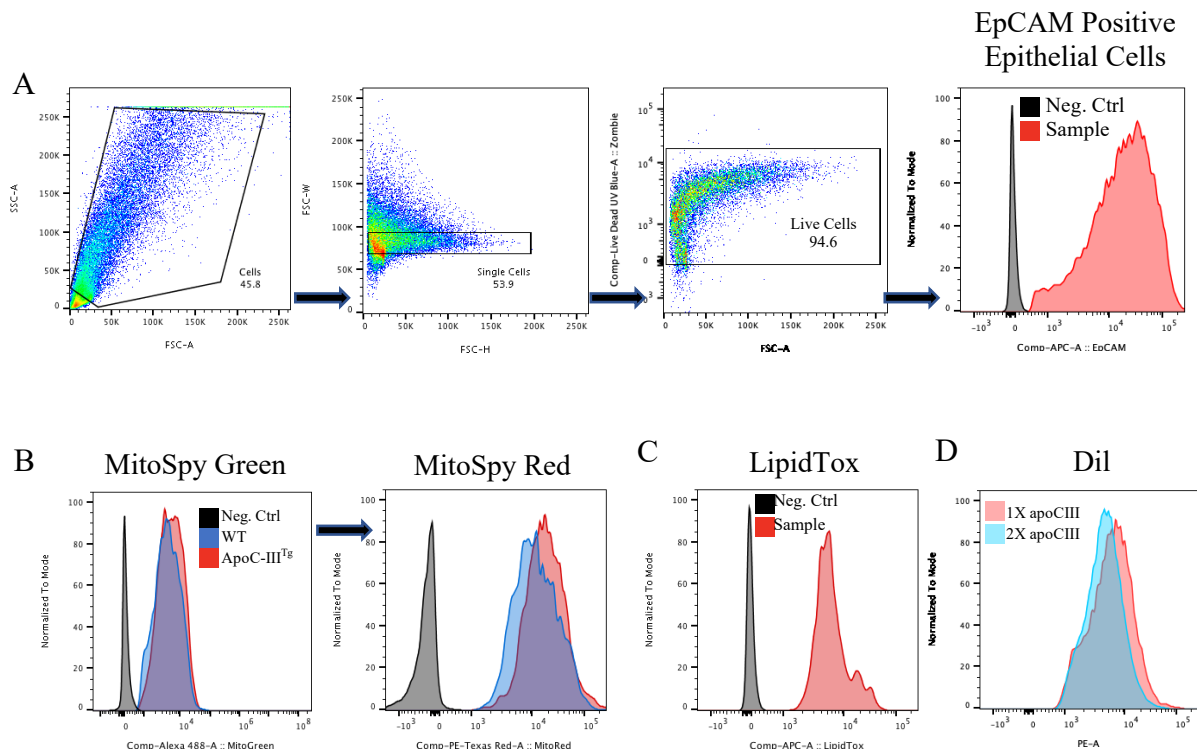
Supplementary Figure S1. *ApoC-III^{Tg}* mouse phenotyping.



Supplementary Figure S1. *ApoC-III^{Tg}* mouse phenotyping. (A) Mouse apoC-III mRNA expression in *WT* mice (white bars) and human apoC-III mRNA expression in *apoC-III^{Tg}* mice (black bars) in small intestine and liver. (B) Gene expression of glutamine and lipid transporters in intestine of *WT* and *apoC-III^{Tg}* mice in fasted and fed conditions (n=3-6 mice per genotype). (C) Densitometric analysis of Western Blot from Figure 1F (n=6 mice per genotype). (D) Protein expression of LDLR in *WT* and *apoC-III^{Tg}* intestine shown by representative Western blot (n=3 mice per genotype, n=2 shown). (E) Gene expression of autophagy genes in intestine of *WT* and *apoC-III^{Tg}* mice in fasted and fed conditions (n=3-6 mice per

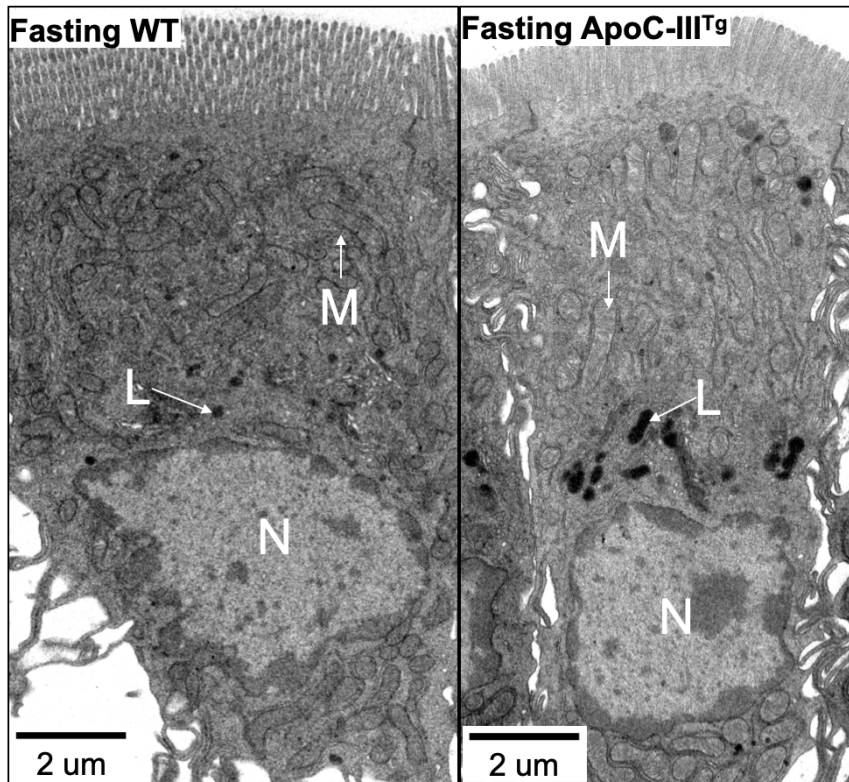
genotype). Protein expression of LC3I and LC3II shown by Western blot (n=4 mice per genotype). Data shown are mean \pm SEM. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, compared with the control mouse (two tailed Student's t test).

Supplementary Figure S2. Flow Cytometric Gating Strategy



Supplementary Figure S2. ***Flow Cytometric Gating Strategy.*** (A) Complete gating strategy for identification of intestinal EpCAM positive epithelial cells. Cells are first gated by size and granularity using FSC-A x SSC-A followed by identification of singlets using FSC-H x FSC-W. Live cells were determined using a Live/Dead discriminate dye. Epithelial cells were defined as EpCAM positive cells. Representative histograms are shown for the following: (B) EpCAM positive epithelial cells were then further gated on MitoSpy Green FM to determine mitochondrial mass. Cells positive for MitoSpy Green (EpCAM⁺) were used to identify cells with MitoSpy Red CMXRos. (C) EpCAM positive epithelial cells were further gated on HCS LipidTox Deep Red to identify intracellular neutral lipid. (D) Dil positive cells were gated on PE to identify mean fluorescence intensity after dil-VLDL treatment. All populations were gated using fluorescence minus one control (black peaks in histograms), except for identification of size and granularity and singlets.

Supplementary Figure S3. TEM images of Fasted Enterocytes



Supplementary Figure S3. **TEM images of fasted enterocytes.** TEM micrographs of jejunum enterocytes collected from *WT* and *apoC-III^{Tg}* mice after a 12 hour fast. Labels: Cytosolic lipid droplets (C), Nucleus (N), Mitochondria (M), Interstitial space (I), Vesicles containing lipid (V) (66, 67). n=3 biological replicates were analyzed by TEM (and at least 6 different enterocytes along the same crypt villus axis of each experimental animal was analyzed).

Supplementary Table S1. ***List of antibodies and stains used for Western Blot and flow cytometry.***

Western blot antibodies dilutions included in the table. Flow cytometry antibodies and stains used at recommended concentrations as per manufacturer's instructions.

Western Blot Antibodies	Company	Catalog Number
Rabbit anti-mouse ApoB, 1:500	Abcam	20737
Rabbit anti-mouse MTTP, 1:500	Abcam	86759
Rabbit anti-mouse MGAT2, 1:200	Santa Cruz	66963
Goat anti-mouse DGAT1, 1:250	Abcam	177236
Rabbit anti-mouse/human apoC3, 1:250	Abcam	55984
Goat anti-human apoC3, 1:500	Academy	33A-G2b
Rabbit anti-mouse/human GAPDH, 1:10,000	Abcam	181602
Rabbit anti-mouse LC3B, 1:2000	Abcam	48394
Rabbit anti-mouse LDLR 1:200	Abcam	30532
Gizzard anti-mouse beta-actin conjugated to HRP, 1:10,000	Santa Cruz	47778

Flow Cytometry Antibodies and Stains	Company	Catalog Number
MitoSpy Red CMXRos	Biologend	424802
MtioSpy Green FM	Biologend	424805
Zombie UV	Biologend	423107
APC anti-mouse CD326	Biologend	118213
HCS LipidTox Deep Red	Invitrogen	H34477
Dil-VLDL	Kalen Biomedical	7701309

Supplementary Table S2. *List of primers used to measure mRNA expression.*

Gene	Name	Species	Forward 5'-3'	Reverse 5'-3'
ACOX1	Acyl-CoA oxidase 1	Mouse	CAGGAAGAGCAAGGAAGTGG	CCTTCTGGCTGATCCATA
ACSL5	Acyl-CoA synthetase long chain	Mouse	GACACCGACACTGAAAGCCA	CCTCGGAGCCCTCATCAGTAA
APOB	Apolipoprotein B	Mouse	GCCCATTGTGGACAAGTTGATC	CCAGGACTTGGAGGTCTTGGGA
APOC3	Apolipoprotein C3	Mouse	GCATCTGCCCGAGCTGAAGAG	CTGAAGTGATTGTCCATCCAGC
APOC3	Apolipoprotein C3	Human	GACCGATGGCTTCAGTTCC	GCAGGATGGATAGGCAGGT
CD36	Cluster of differentiation 36	Mouse	TTGTACTATACTGTGGCTAAATGAGA	CTTGTGTTTTGAACATTCTGCTT
CPT1A	Carnitine Palmitoyltransferase 1 alpha	Mouse	CTCAGTGGGAGCGACTCTTCA	GGCCTCTGTGGTACACGACAA
CPT1B	Carnitine Palmitoyltransferase 1 beta	Mouse	CCCATGTGCTCCTACCAGAT	CCTTGAAGAAGCGACCTTTG
PPIA	Cyclophilin	Mouse	TGGAGAGCACCAAGACAGACA	TGCCGGAGTCGACAATGAT
DGAT1	Diacylglyceride acyltransferase 1	Mouse	GCTCTGGCATCATACTACCATC	CGGTAGGTCAGGTTGTCTGG
HSL	Hormone sensitive lipase	Mouse	GGCTCACAGTTACCATCTCACC	GAGTACCTTGCTGTCTGTCC
LC3A	Microtubule-associated protein 1 light chain 3 alpha	Mouse	TTGGTCAAGATCATCCGGC	GCTCACCATGTGTGTCTGG
LC3B	Microtubule-associated protein 1 light chain 3 beta	Mouse	CCCACCAAGATCCCAGTGAT	CCAGGAACTTGGTCTTGTTCCA
LDLR	LDL receptor	Mouse	TGACTCAGACGAACAAGGCTG	ATCTAGGCAATCTCGGTCTCC
LPL	Lipoprotein lipase	Mouse	ACTCGCTCTCAGATGCCCTA	TTGTGTTGCTTGCCATCCT
ACADM	Medium-chain acyl-CoA dehydrogenase	Mouse	TGACGGAGCAGCCAATGA	ATGGCCGCCACATCAGA
MGAT2	Monoacylglycerol acyltransferase 2	Mouse	CAGAAGATCATGGGCATCTC	CCAAAGCTGTACTGGAAGAC
MTTP	Microsomal triglyceride transfer protein	Mouse	CAAGCTCACGTACTCCACTGAAG	TCATCATCACCATCAGGATTCCT
PLIN2	Perilipin 2	Mouse	AGCTCAGTTATGGTCTTG	TCCTCACAAGACTAACAC
PLIN3	Perilipin 3	Mouse	CTGAGAAAGGCGTCAAGACC	TTCTTGAGCCCCAGACACT
PGC1A	Peroxisome proliferator-activated receptor gamma coactivator 1 alpha	Mouse	AACCACACCCACAGGATCAGA	TCTTCGTTTATTGCTCCATGA
SNAT2	Sodium coupled neutral amino acid transporter 2	Mouse	GGTATCTGAACGGTGACTATCTG	TCTGCGGTGCTATTGAATGC
SNAT1	Sodium coupled neutral amino acid transporter 1	Mouse	TTACCAACCATCGCCTTC	ATGAGAATGTCGCCTGTG
TFEB	Transcription factor EB	Mouse	GCGAGAGCTTAACAGATGCTGA	CCGGTCATTGATGTTGAACC
VLDLR	VLDL receptor	Mouse	TCCAATGGCCTAATGGAATTACA	AGCATGTGCAACTTGGAAATCC