

Supplemental Materials

Ileum Gene Expression in Response to Acute Systemic Inflammation in Mice Chronically Fed Ethanol: Beneficial Effects of Elevated Tissue n-3 PUFAs

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Table S1. Top ten DEGs in WT EtOH+LPS vs WT EtOH.

Gene title	Fold change	p-value	q-value	Molecular Function
<i>Lcn2</i>	566.8	0.00005	0.00033973	Protease Binding
<i>Fabp1</i>	166.6	0.00005	0.00033973	Fatty Acid Binding
<i>Saa3</i>	140.1	0.00005	0.00033973	Chemoattractant
<i>G6pc</i>	88.3	0.00005	0.00033973	Glucose-6-Phosphatase
<i>S100a8</i>	80.8	0.00155	0.00676799	Protein Binding
<i>Serpina3n</i>	54.6	0.00005	0.00033973	Peptidase Inhibitor
<i>Igkv3-1</i>	47.5	0.00025	0.00143149	Antigen Binding
<i>Ptx3</i>	44.6	0.00005	0.00033973	Protein Binding
<i>Fga</i>	43.7	0.00115	0.00528216	Extracellular Matrix
<i>Cxcl1</i>	43.0	0.00005	0.00033973	Chemokine
<i>Car1</i>	-215	0.01065	0.0335852	Aryl esterase
<i>Gsdmc4</i>	-155.7	0.00005	0.00033973	Phosphatidylserine Binding
<i>Gsdmc2</i>	-149.9	0.00005	0.00033973	Phosphatidylserine Binding
<i>Cyp2c55</i>	-141.2	0.00005	0.00033973	Monoxygenase
<i>Pla2g4c</i>	-84.4	0.00005	0.00033973	Phospholipase
<i>Gm8979</i>	-71.8	0.00005	0.00033973	Unknown
<i>9130208D14Rik</i>	-57.4	0.00005	0.00033973	Unknown
<i>Gm6086</i>	-43.4	0.00005	0.00033973	Sulfotransferase
<i>Slc37a2</i>	-38.7	0.00005	0.00033973	Antiporter
<i>Mme</i>	-33.1	0.00005	0.00033973	Endopeptidase

Table S2. Top ten DEGs in *fat-1* EtOH+LPS vs *fat-1* EtOH.

Gene title	Fold change	<i>p</i> -value	<i>q</i> -value	Molecular Function
<i>Lcn2</i>	496.8	5.00E-05	0.00093986	Protease Binding
<i>Lct</i>	402.0	0.00005	0.00093986	Lactase
<i>Gata4</i>	134	0.0019	0.0193444	Transcription Factor
<i>Gimd1</i>	123.9	0.0027	0.0252945	Nucleotide Binding
<i>Saa3</i>	122.2	0.00005	0.00093986	Chemoattractant
<i>Plb1</i>	117.5	0.00005	0.00093986	Phospholipase
<i>Ugt2a3</i>	91.6	0.00005	0.00093986	Transferase
<i>Ifit3</i>	87.4	0.00005	0.00093986	RNA Binding
<i>Apoa4</i>	68.1	0.00005	0.00093986	Lipid Transport
<i>Isg15</i>	67.5	0.00005	0.00093986	Integrin Binding
<i>Cyp2c55</i>	-197.9	0.00005	0.00093986	Monooxygenase
<i>Hao2</i>	-143.9	0.00005	0.00093986	Oxidoreductase
<i>Cyp2d34</i>	-127.1	0.00005	0.00093986	Monooxygenase
<i>Gsdmc2</i>	-122.3	0.00005	0.00093986	Phosphatidylserine Binding
<i>Gsdmc4</i>	-99.1	0.00005	0.00093986	Phosphatidylserine Binding
<i>Nov</i>	-86.8	0.00005	0.00093986	Notch Binding
<i>Cbs</i>	-84.8	0.00005	0.00093986	Cysteine Synthase
<i>Slc6a14</i>	-48.2	0.00005	0.00093986	Symporter
<i>Fa2h</i>	-46.2	0.00005	0.00093986	Oxidoreductase

Table S3. Top ten DEGs shared between WT and *fat-1* mice in response to EtOH+LPS vs EtOH.

<i>fat-1</i> EtOH+LPS vs <i>fat-1</i> EtOH				WT EtOH+LPS vs WT EtOH			Molecular Function
Gene title	fold	<i>p</i> -value	<i>q</i> -value	fold	<i>p</i> -value	<i>q</i> -value	
<i>Lcn2</i>	496.8	0.00005	0.00093986	566.803824	0.00005	0.00033973	Protease Binding
<i>Gata4</i>	134	0.0019	0.0193444	12.6818599	0.00005	0.00033973	Transcription Factor
<i>Gimd1</i>	123.9	0.0027	0.0252945	6.40208746	0.00005	0.00033973	Nucleotide Binding
<i>Saa3</i>	122.2	0.00005	0.00093986	140.081757	0.00005	0.00033973	Chemoattractant
<i>Plb1</i>	117.5	0.00005	0.00093986	11.0081047	0.00005	0.00033973	Phospholipase
<i>Ifit3</i>	87.4	0.00005	0.00093986	41.6191885	0.00005	0.00033973	RNA Binding
<i>Apoa4</i>	68.1	0.00005	0.00093986	14.5408208	0.00005	0.00033973	Lipid Transport
<i>Isg15</i>	67.5	0.00005	0.00093986	23.8113806	0.00005	0.00033973	Integrin Binding
<i>Usp18</i>	67.2	0.00005	0.00093986	36.6686476	0.00005	0.00033973	Peptidase
<i>Mx2</i>	64.9	0.00005	0.00093986	28.7745743	0.00005	0.00033973	Nucleotide Binding
<i>Car1</i>	-5168.5	0.00035	0.00503675	-215	0.01065	0.0335852	Aryl esterase
<i>Cyp2c55</i>	-197.9	0.00005	0.00093986	-141.2	0.00005	0.00033973	Monooxygenase
<i>Hao2</i>	-143.9	0.00005	0.00093986	-27	0.00005	0.00033973	Oxidoreductase
<i>Cyp2d34</i>	-127.1	0.00005	0.00093986	-8.8	0.00005	0.00033973	Monooxygenase
<i>Gsdmc2</i>	-122.3	0.00005	0.00093986	-149.9	0.00005	0.00033973	Phosphatidylserine Binding
<i>Gsdmc4</i>	-99.1	0.00005	0.00093986	-155.7	0.00005	0.00033973	Phosphatidylserine Binding
<i>Cbs</i>	-84.8	0.00005	0.00093986	-16.9	0.00005	0.00033973	Cysteine Synthase
<i>Slc6a14</i>	-48.2	0.00005	0.00093986	-10.6	0.00005	0.00033973	Symporter
<i>Fa2h</i>	-46.2	0.00005	0.00093986	-2.7	0.00005	0.00033973	Oxidoreductase
<i>St6galnac6</i>	-30.7	0.00005	0.00093986	-4.4	0.00005	0.00033973	Sialyltransferase

Table S4. Top ten DEGs exclusive to WT EtOH+LPS vs WT EtOH mice.

Gene title	Fold change	<i>p</i> -value	<i>q</i> -value	Molecular Function
<i>Fabp1</i>	166.6	0.00005	0.00033973	Fatty Acid Binding
<i>S100a8</i>	80.7	0.00155	0.00676799	Protein Binding
<i>Igkv3-1</i>	47.5	0.00025	0.00143149	Antigen Binding
<i>Ptx3</i>	44.6	0.00005	0.00033973	Protein Binding
<i>Fga</i>	43.7	0.00115	0.00528216	Extracellular Matrix
<i>Cxcl1</i>	43	0.00005	0.00033973	Chemoattractant
<i>Timp1</i>	37.9	0.01665	0.0484773	Protease Inhibitor
<i>Muc1</i>	23.2	0.00645	0.0222319	Mucin
<i>Adamts4</i>	22.1	0.00935	0.0302396	Metallopeptidase
<i>Marco</i>	20.4	0.01405	0.0423881	Scavenger Receptor
<i>9130208D14Rik</i>	-57.4	0.00005	0.00033973	Unknown
<i>Mme</i>	-33.1	0.00005	0.00033973	Endopeptidase
<i>Igkv2-109</i>	-31.2	0.00005	0.00033973	Antigen Binding
<i>Igkv4-53</i>	-24.5	0.00005	0.00033973	Antigen Binding
<i>Ighv14-4</i>	-19.8	0.00005	0.00033973	Antigen Binding
<i>Rn7sk</i>	-17.8	0.0011	0.00508653	
<i>Igkv6-13</i>	-16.1	0.00005	0.00033973	Antigen Binding
<i>Ighv1-52</i>	-14.9	0.00005	0.00033973	Antigen Binding
<i>Abca12</i>	-14.8	0.00005	0.00033973	Antigen Binding
<i>Igkv5-43</i>	-11.6	0.00005	0.00033973	Antigen Binding

Table S5. Top ten DEGs exclusive to *fat-1* EtOH+LPS vs *fat-1* EtOH mice.

Gene title	Fold change	<i>p</i> -value	<i>q</i> -value	Molecular Function
<i>Lct</i>	402	0.00005	0.00093986	Lactase
<i>Ugt2a3</i>	91.6	0.00005	0.00093986	Transferase
<i>Cyp2b10</i>	64.6	0.00005	0.00093986	Monooxygenase
<i>Enpp3</i>	53	0.00005	0.00093986	Nucleic Acid Binding
<i>Fpr1</i>	33.8	0.0056	0.044064	G-protein Coupled Receptor
<i>Igkv2-116</i>	29.1	0.00315	0.0285008	Antigen Binding
<i>Nr1i3</i>	27.4	0.00025	0.00380465	Nuclear Receptor
<i>S100a9</i>	24.3	0.00465	0.0382219	Protein Binding
<i>Slc23a1</i>	23.4	0.0003	0.00442667	Transporter
<i>Chil1</i>	18.5	0.00005	0.00093986	Chitin Binding
<i>Nov</i>	-86.8	0.00005	0.00093986	Notch Binding
<i>Grin3a</i>	-45	0.00005	0.00093986	Ion Channel
<i>Ighg2c</i>	-32.8	0.0026	0.0246593	Antigen Binding
<i>Npy4r</i>	-29.2	0.0031	0.0281711	Peptide Hormone Binding
<i>Gm11346</i>	-28.9	0.0035	0.030899	Unknown
<i>Gm2115</i>	-25.5	0.0037	0.0321765	Unknown
<i>Adamts18</i>	-25.2	0.00465	0.0382219	Metalloendopeptidase
<i>Nxpe2</i>	-21.4	0.00005	0.00093986	Protein Binding
<i>Syt2</i>	-20.7	0.0015	0.0160349	SNARE Binding
<i>Cyp2d10</i>	-19.6	0.00005	0.00093986	Monooxygenase

Table S6. Top ten DEGs in *fat-1* EtOH+LPS vs WT EtOH+LPS mice.

Gene title	Fold change	<i>p</i> -value	<i>q</i> -value	Molecular Function
<i>Lct</i>	202.9	0.00005	0.00132348	Lactase
<i>Cyp2b10</i>	100.9	0.00005	0.00132348	Monooxygenase
<i>Slc28a1</i>	96.7	0.0002	0.00451313	Symporter
<i>Mme</i>	46.4	0.00005	0.00132348	Endopeptidase
<i>Gm766</i>	45.9	0.00005	0.00132348	Unknown
<i>Enpp3</i>	45.2	0.00005	0.00132348	Nucleic Acid Binding
<i>Cyp3a11</i>	45.1	0.00005	0.00132348	Monooxygenase
<i>Ugt2a3</i>	39	0.00005	0.00132348	Transferase
<i>Asah2</i>	30.5	0.00005	0.00132348	Sphingolipid Metabolism
<i>Slc25a45</i>	25.2	0.00005	0.00132348	ATP Transporter
<i>Zfp865</i>	-18.6	0.00005	0.00132348	Nuclei Acid Binding
<i>Igkv4-69</i>	-14.6	0.0023	0.0311507	Antigen Binding
<i>Hal</i>	-8	0.0002	0.00451313	Ammonia Lyase
<i>Ighg1</i>	-7.1	0.00005	0.00132348	Antigen Binding
<i>Gm20703</i>	-6.7	0.003	0.0378	Unknown
<i>Fa2h</i>	-6.3	0.00005	0.00132348	Oxidoreductase
<i>Gm21498</i>	-6.1	0.0004	0.007956	Unknown
<i>Gm11821</i>	-6	0.0039	0.04563	Unknown
<i>Gm42974</i>	-5.2	0.00075	0.0127345	Unknown
<i>B230208H11Rik</i>	-5.1	0.0009	0.0146902	Unknown

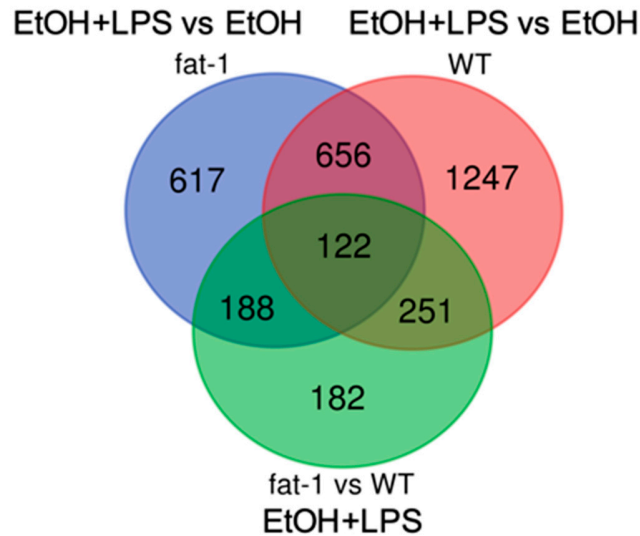


Figure S1. Venn diagram illustrating the number of significant ileum genes shared between statistical comparisons. The blue circle encompasses the number of significant ileum genes for the *fat-1* EtOH+LPS vs *fat-1* EtOH comparison. The red circle encompasses the number of significant ileum genes from the WT EtOH+LPS vs WT EtOH comparison. The green circle encompasses the number of significant ileum genes from the *fat-1* EtOH+LPS vs WT EtOH+LPS comparison.

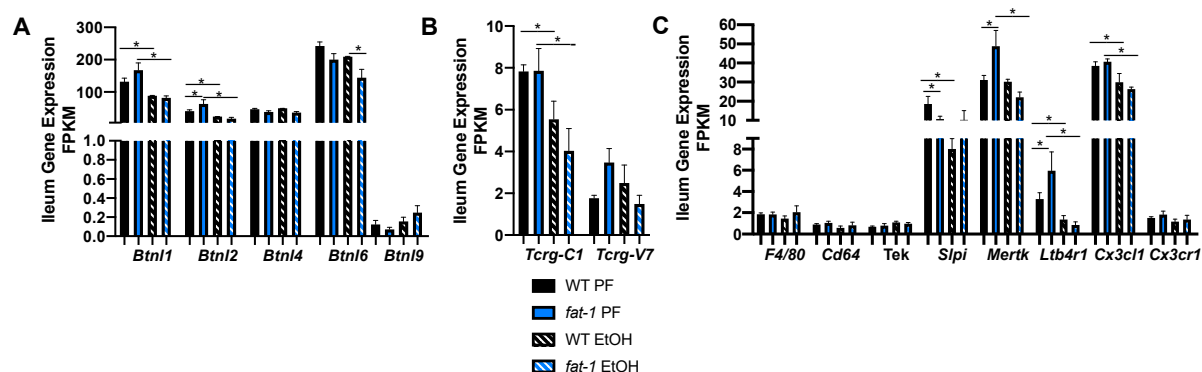


Figure S2. Ileum expression of BTNL-mediated T cell and pro-restorative macrophage gene signatures after EtOH feeding in WT and fat-1 mice. (A) Ileum Btl and (B) $\gamma\delta$ T cell gene signature expression for WT PF, fat-1 PF, WT EtOH, and fat-1 EtOH mice. (C) Pro-restorative macrophage gene expression for WT PF, fat-1 PF, WT EtOH, and fat-1 EtOH mice.

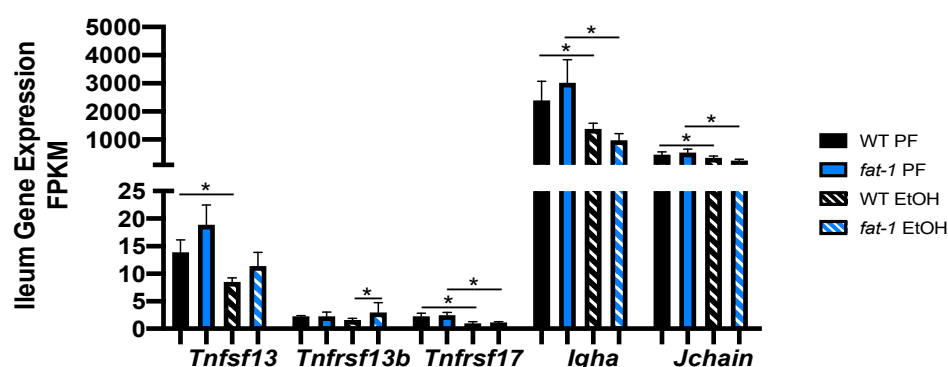


Figure S3. Ileum expression of APRIL-signaling genes and IgA+ B-Cell gene markers. APRIL signaling and IgA gene expression for WT PF, fat-1 PF, WT EtOH, and fat-1 EtOH mice.

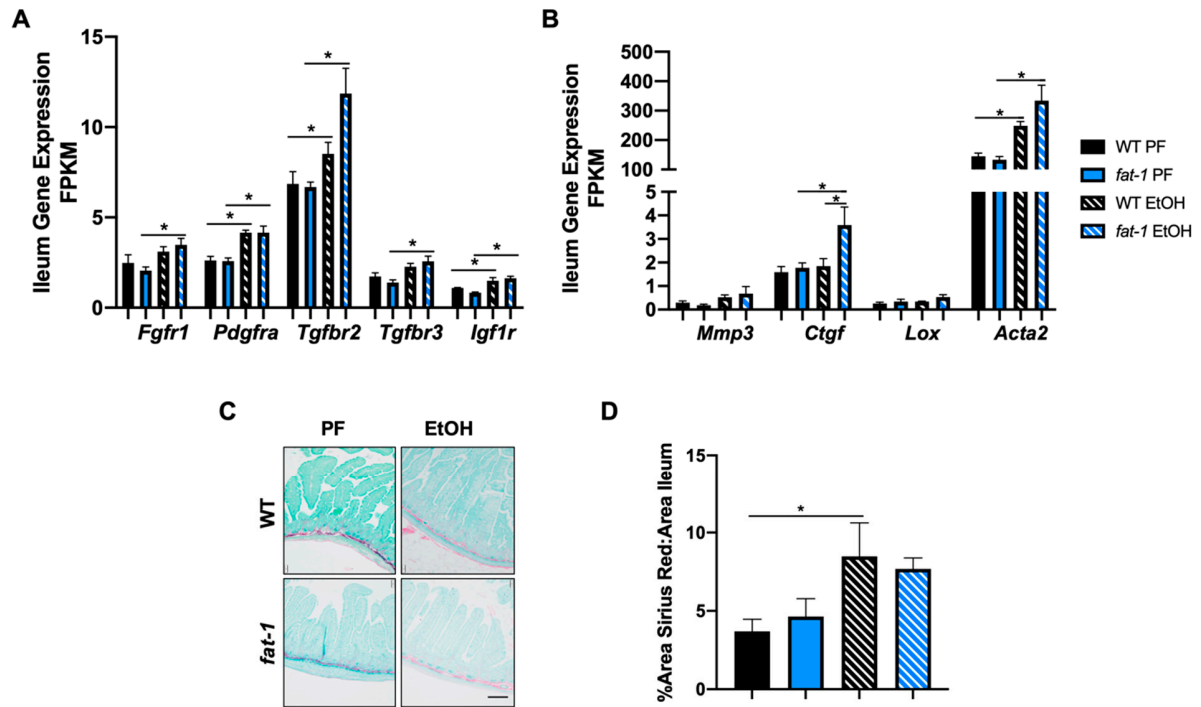


Figure S4. Ileum expression of fibrosis markers and histological ileum fibrosis. (A) Ileum gene expression of pro-fibrotic receptors in WT PF, fat-1 PF, WT EtOH, and fat-1 EtOH mice. (B) Ileum gene expression of pro-fibrotic markers in WT PF, fat-1 PF, WT EtOH, and fat-1 EtOH mice. (C) Representative images of Sirius red-stained ileal sections at 200X from WT PF, WT EtOH, *fat-1* PF, and *fat-1* EtOH mice (scale bar is 40 μ m). (D) Quantification of are of sirius red staining relative to total ileum area.