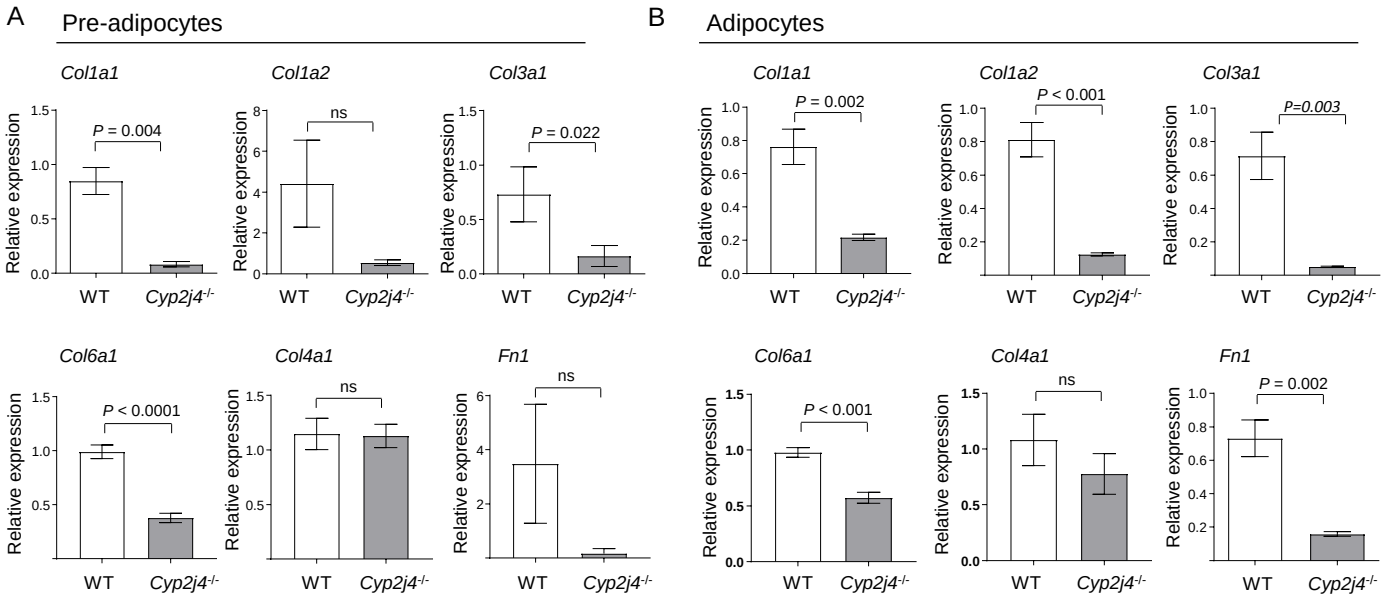
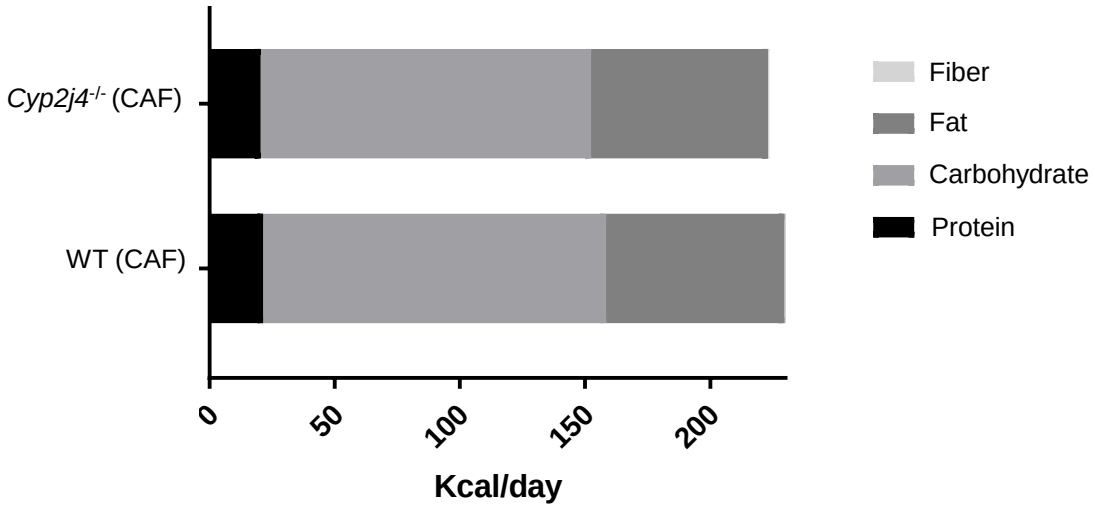
**Supplementary Figure A.1**



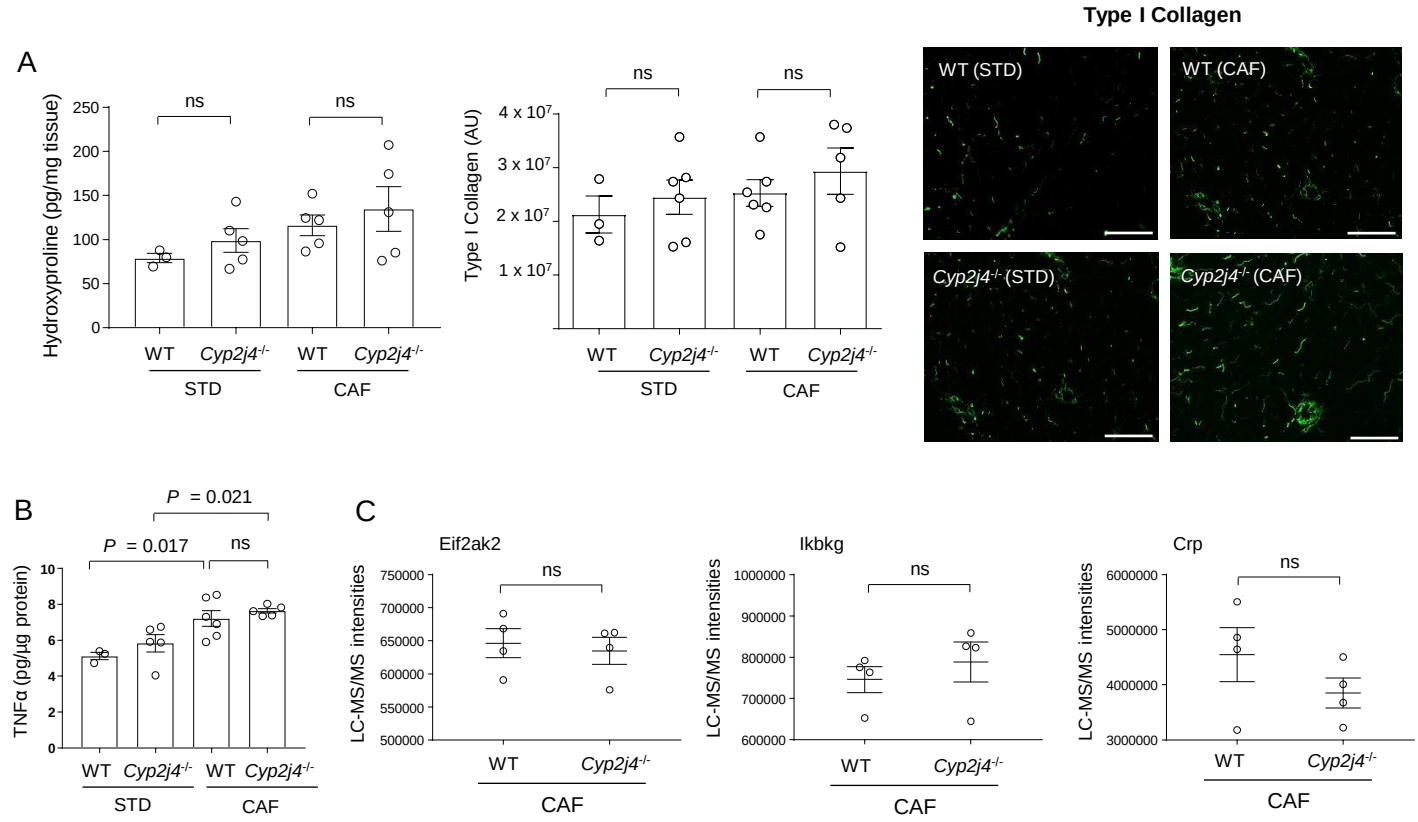

**Supplementary Figure A.1.** Collagen and fibronectin expression in *Cyp2j4*$^{-/-}$ MSCs-derived pre-adipocytes and adipocytes. qRT-PCR for *Col1a1*, *Col1a2*, *Col3a1*, *Col6a1*, *Col4a1* and *Fn1* in MSC-derived pre-adipocytes (A) and adipocytes (B) isolated from WT and *Cyp2j4*$^{-/-}$ rats. Error bars are s.e.m.

**Supplementary Figure A.2**



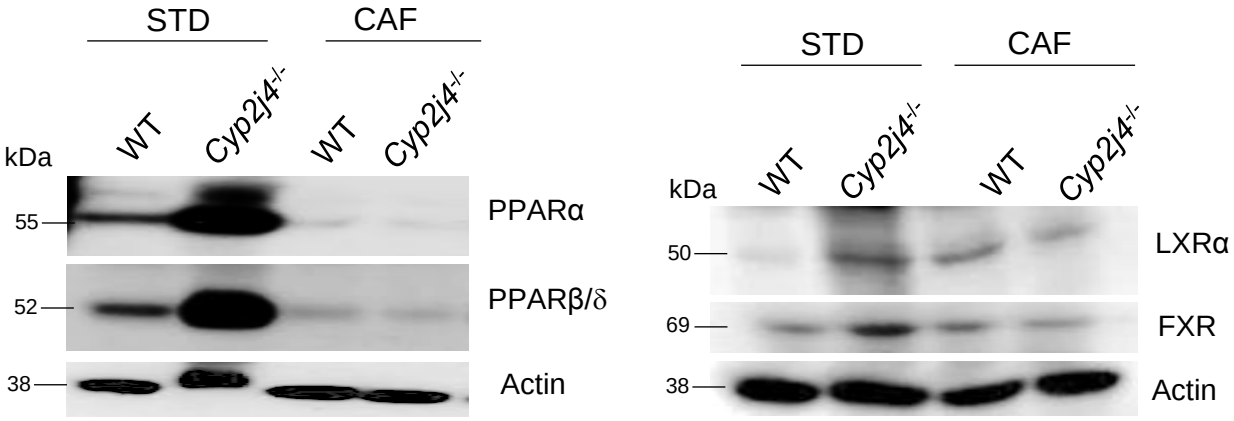

**Supplementary Figure A.2.** Energy intake is not different between *Cyp2j4*$^{-/-}$ and WT rats under CAF. Kcal / day in fiber, fat, carbohydrates and proteins measured at 11$^{th}$ week following the initiation of CAF.

**Supplementary Figure A.3**



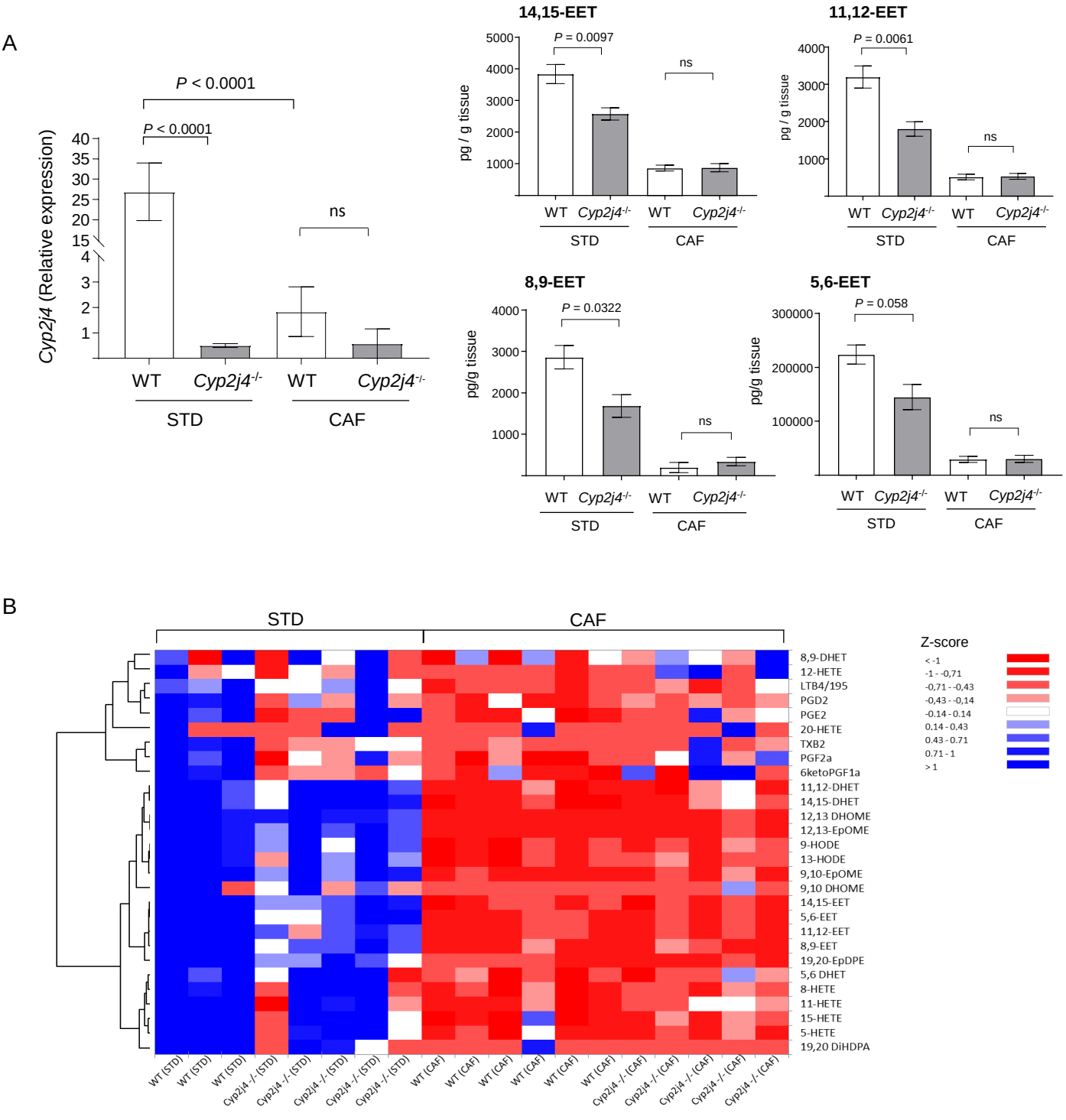

**Supplementary Figure A.3.** *Cyp2j4*$^{-/-}$ livers do not show increased inflammatory and fibrotic markers upon CAF. (A) Hydroxyproline levels and type I collagen immunofluorescence quantification in WT and *Cyp2j4*$^{-/-}$ livers upon treatment with STD or CAF. (B) TNFα quantification by ELISA in WT and *Cyp2j4*$^{-/-}$ livers upon treatment with STD or CAF. (C) LC-MS/MS profiles for hepatic inflammatory markers such as Eif2ak2, Ikbkg and Crp. At least n=3 rats were used by group. Error bars are s.e.m. AU, arbitrary units; ns, non-significant. Scale bars, 100µm.

**Supplementary Figure A.4**




**Supplementary Figure A.4.** Western blot analyses for PPARα, PPARβ/δ, LXRα and FXR in WAT from WT and *Cyp2j4*$^{-/-}$ rats under STD or CAF conditions.

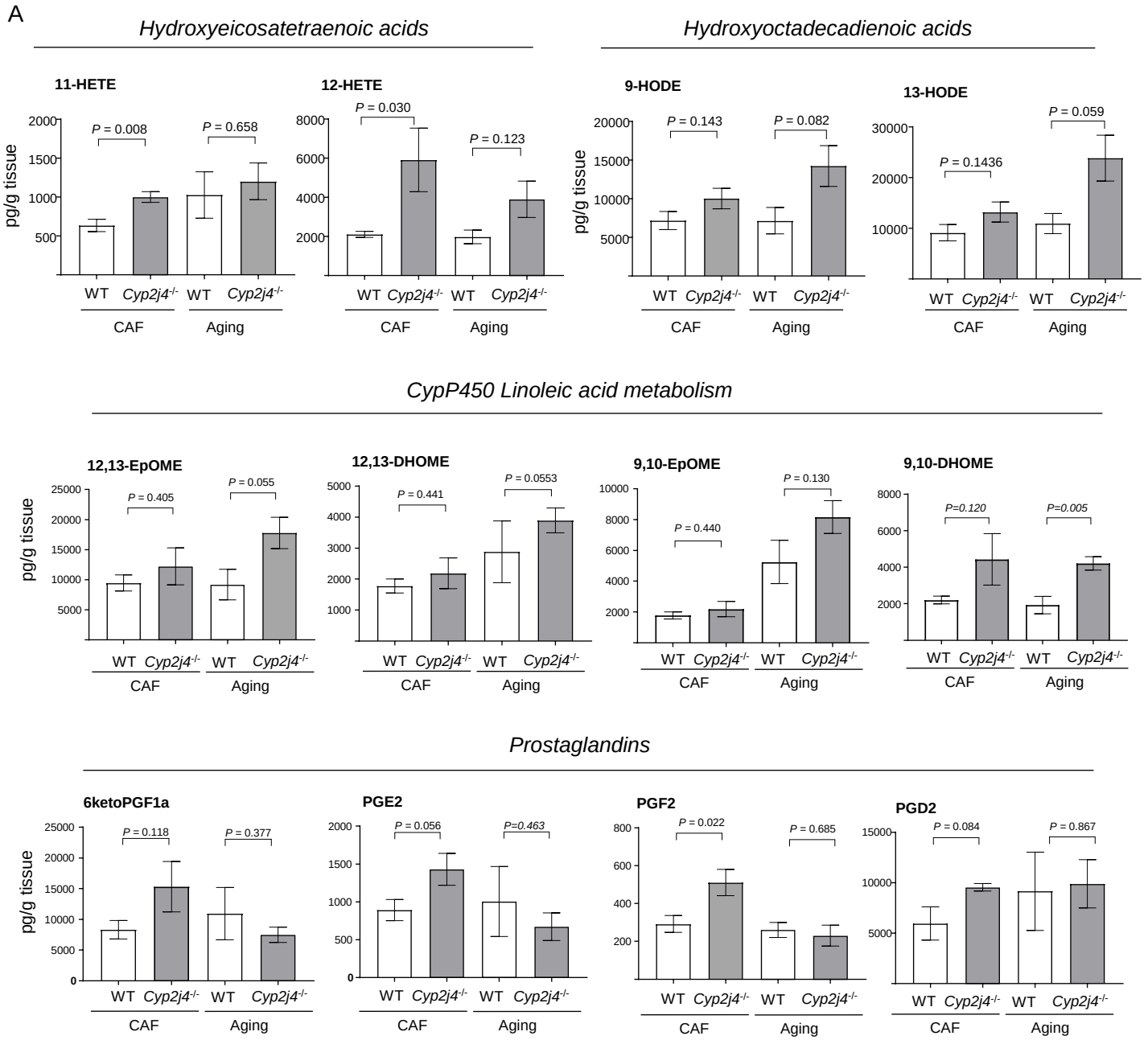
**Supplementary Figure A.5**




**Supplementary Figure A. 5.** *Cyp2j4* deletion affects WAT EET and oxylipin levels**.** (A) *Cyp2j4* expression levels measured by qRT-PCR (left panel) in STD and CAF in WT and *Cyp2j4*$^{-/-}$ WAT. The right panel shows LC-MS analysis of 4 EET regioisomers in STD and CAF in WT and *Cyp2j4*$^{-/-}$ WAT. (B) Heatmap showing 28 eicosanoids measured by LC-MS in WT and *Cyp2j4*$^{-/-}$ *WAT* under STD and CAF. At least n=3 rats/group; error bars are s.e.m. ns, non-significant.

**Supplementary Figure A.6**

A




B

| Gene | FPKM | LogFC* | *P* | FDR |
|---|---|---|---|---|
| ***Cyp2j4*** | **> 10** | **-4.62** | **5 x $10^{-86}$** | **1.51 x $10^{-84}$** |
| ***Ptgs2*** | **>1** | **4.15** | **1.62 x $10^{-8}$** | **7.36 x $10^{-6}$** |
| *Ptges* | >10 | 1.30 | 0.13 | 1.00 |
| *Ptgs1* | >50 | -0.08 | 0.50 | 1.00 |
| *Ptges3* | > 300 | -0.08 | 0.51 | 1.00 |
| *Ptges2* | >5 | 0.09 | 0.61 | 1.00 |
| *Alox5ap* | >50 | 0.22 | 0.10 | 1.00 |
| *Alox12* | >1 | -0.11 | 0.77 | 1.00 |
| *Cyp2d1* | >1 | 0.07 | 0.77 | 1.00 |
| *Cyp2r1* | >1 | -0.29 | 0.26 | 1.00 |
| *Cyp2u1* | >1 | 0.13 | 0.43 | 1.00 |
| *Cbr3* | >1 | 0.26 | 0.21 | 1.00 |

**Supplementary Figure A.6.** AA and LA-derived oxylipins are increased in the *Cyp2j4*$^{-/-}$ WAT as a consequence of CAF or aging**.** (A) *Cyp2j4* deletion affects WAT HETE, HODE, EpOME, DHOME and prostaglandin levels in either aging or CAF conditions. At least n=3 rats/group. The LC-MS measurements are pg/g tissue for all oxylipins. (B) RNA-seq results in WT and *Cyp2j4*$^{-/-}$ BMDMs. FPKM, Fragments Per Kilobase of transcript per Million mapped reads; FC, fold change; FDR, false discovery rate. Error bars are s.e.m.