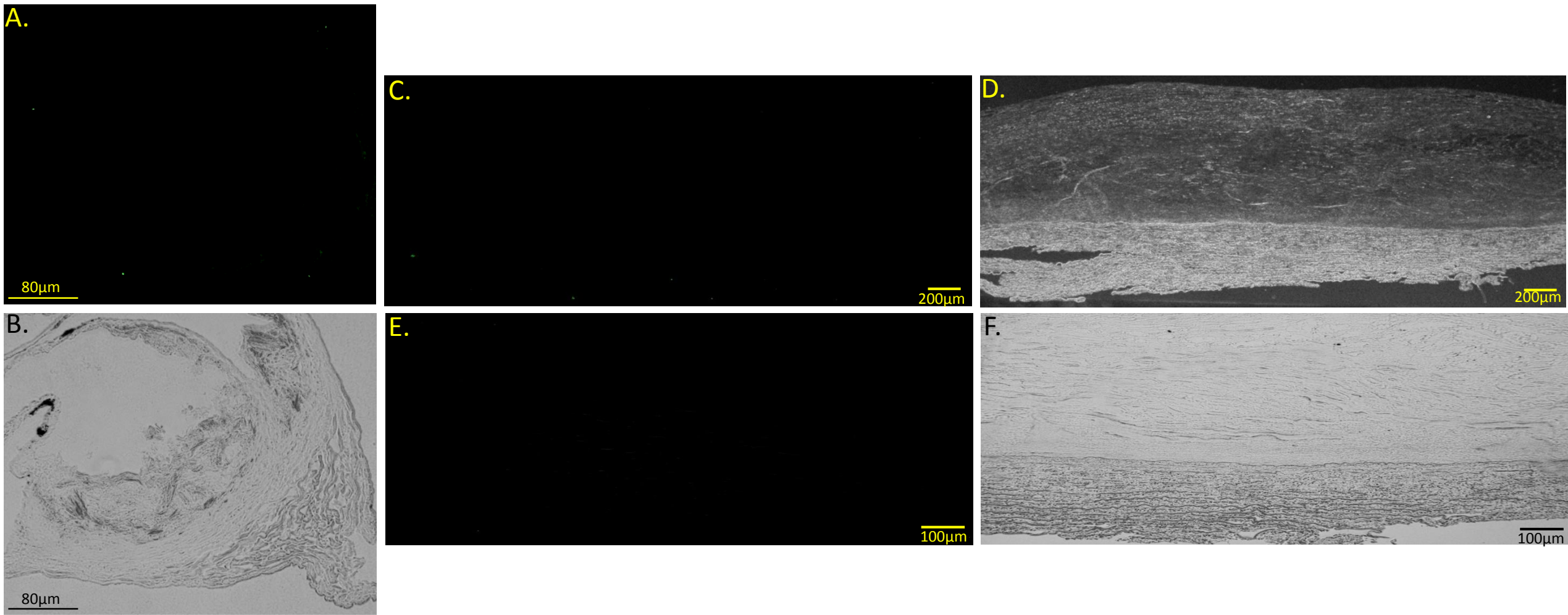
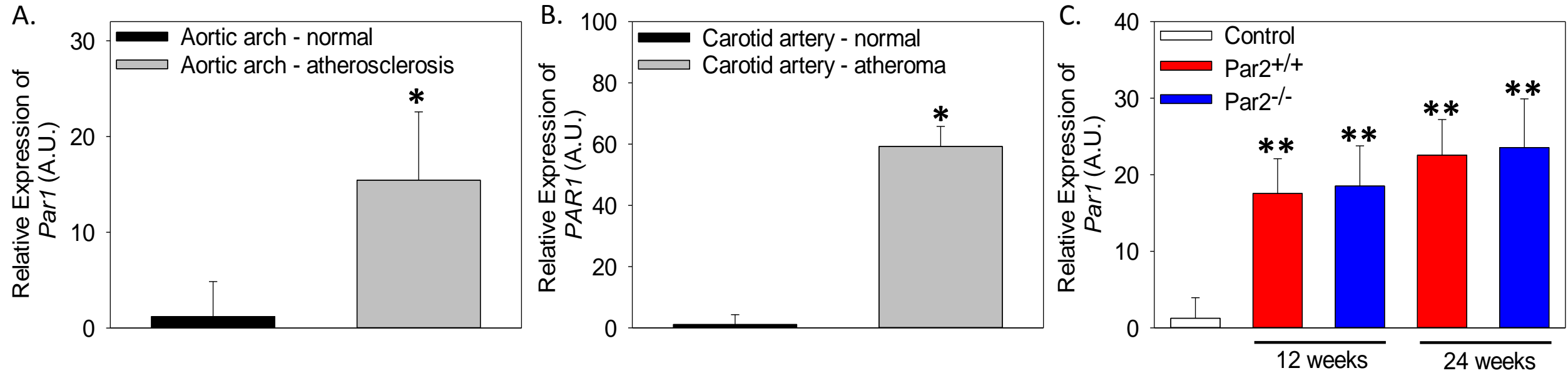


Supplemental Figure I



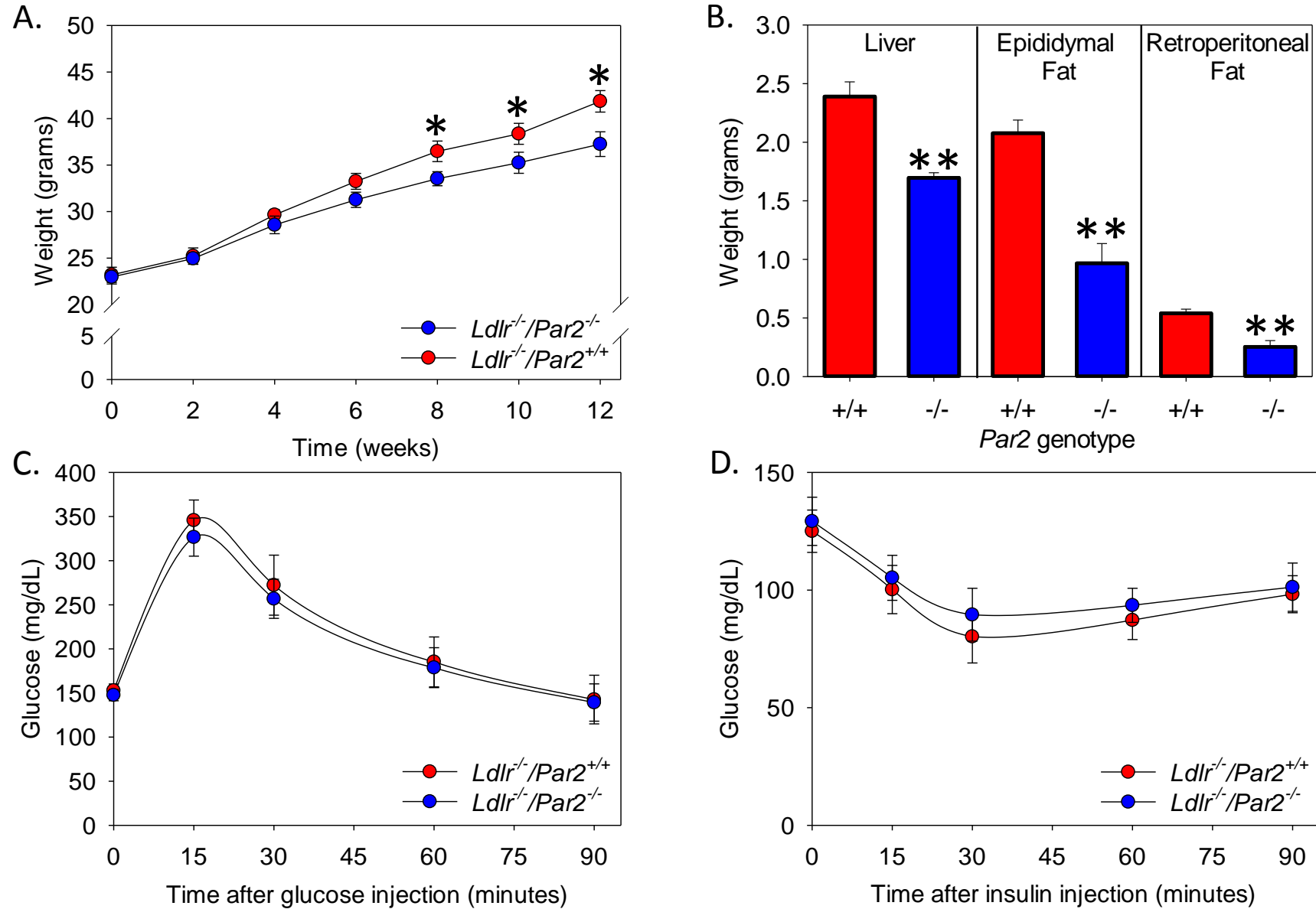
Supplemental figure I: Control images for immunofluorescent staining. Control immunofluorescent staining was performed on mouse atherosclerotic aortic sinus (A; 10x) and human carotid atherosclerotic lesions (C & E; 4x and 10x, respectively). Brightfield images were also taken of the sections (B; mouse aortic sinus; 10x) and (D & F; human carotid lesions; 4x and 10x, respectively). Sections underwent all staining procedures and were captured at similar settings (e.g. gain and intensity) to images in Figure 1, without primary labelled antibody.

Supplemental Figure II



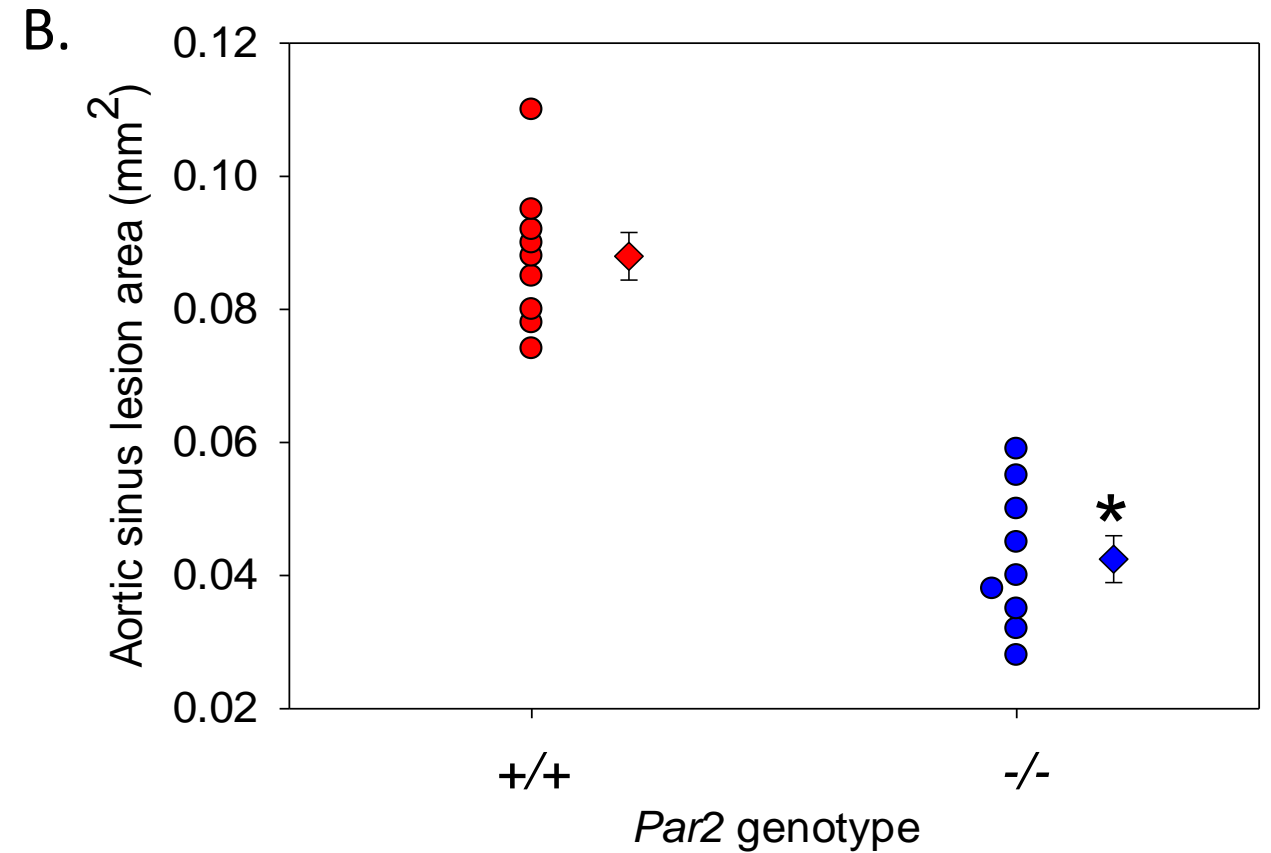
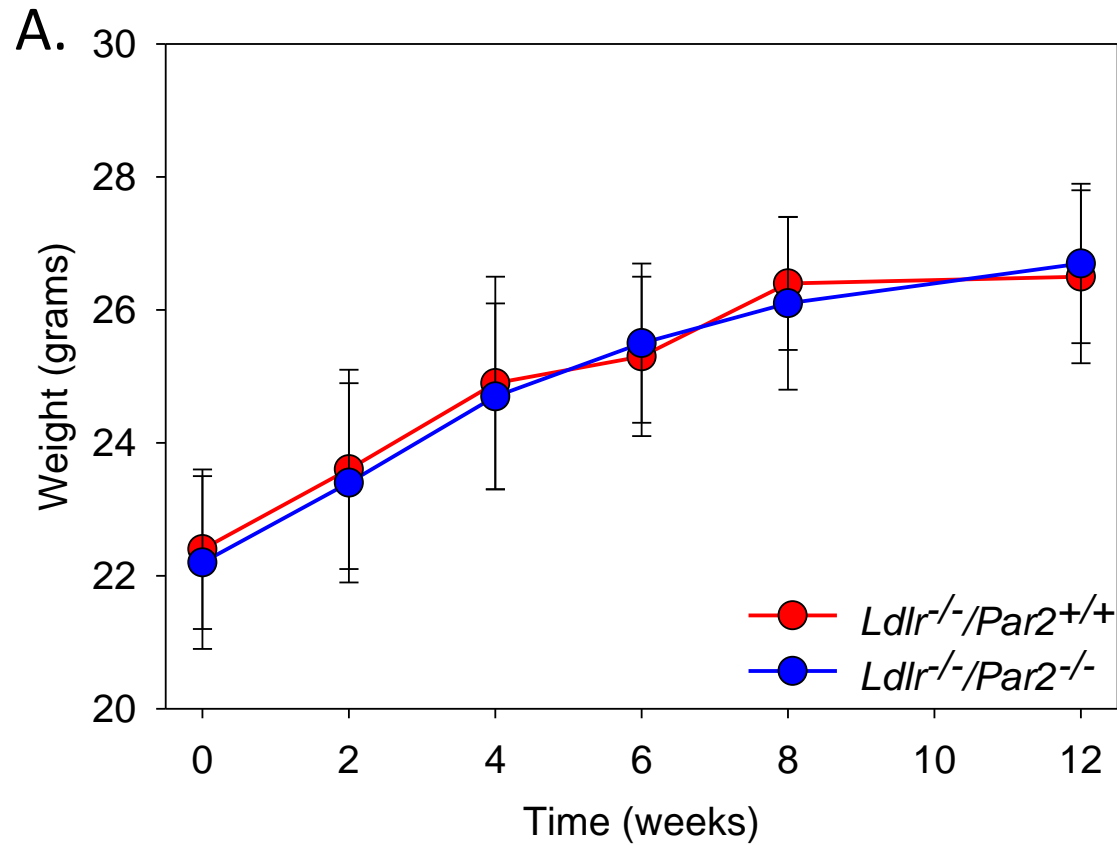
Supplemental figure II: Expression of PAR1 mRNA is increased in the atherosclerotic lesions of mice and humans. Normal mouse aortic arch (*Ldlr*^{-/-} mice fed a chow ® diet for 24 weeks) or atherosclerosis-containing aortic arches (*Ldlr*^{-/-} mice fed a 'Western' diet for 24 weeks) were examined for (A) mRNA extrapolated to normal (n = 5 individual samples/group). Normal or diseased human carotid arteries were isolated and examined for (B) mRNA extrapolated to normal (n = 5 individual samples/group). (C) The relative expression of *Par1* was also examined in *Ldlr*^{-/-} mice that were *Par2*^{+/+} and ^{-/-} and fed a 'Western' diet for 12 or 24 weeks. Histograms represent mean ± SEM. * Denotes P < 0.05 for comparisons to normal aorta/artery (Two-tailed Student's t-test). ** Denotes P < 0.001 for comparisons to control aortic arch (One Way ANOVA on Ranks with Dunn's Post Hoc Analysis).

Supplemental Figure III



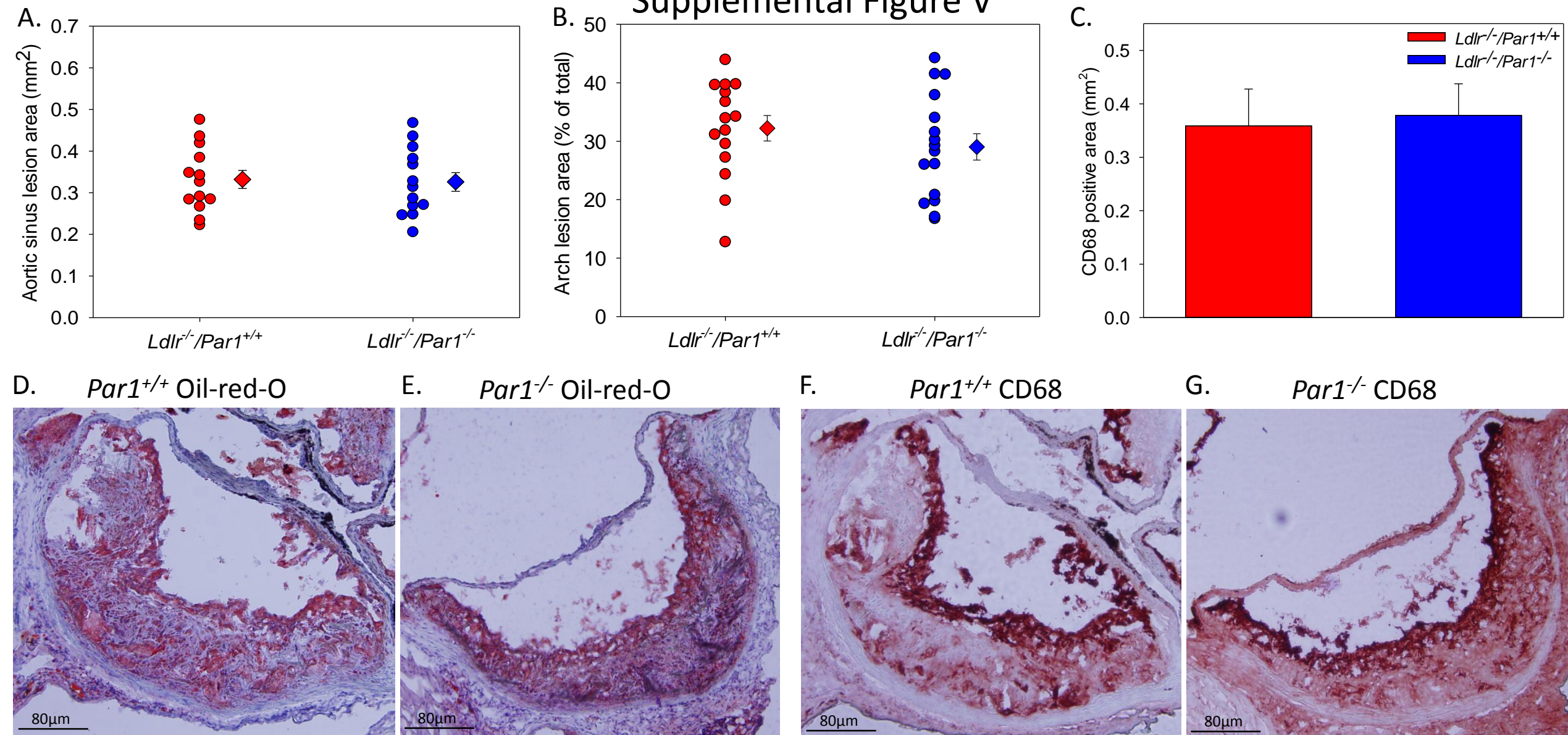
Supplemental figure III: PAR2 deficiency reduces body and adipose weight with ‘Western’ diet. Male *Ldlr*^{-/-} mice that were *Par2*^{+/+} and *-/-* (n = 16 – 30) were fed a high fat/cholesterol diet for 12 weeks. (A) Biweekly weight gain over a 12 week period. (B) Terminal liver, epididymal, and retroperitoneal fat pad weights. (C) Glucose tolerance test performed at 10 weeks of diet (n = 6 each genotype). (D) Insulin tolerance test performed at 11 weeks of diet (n = 6 each genotype). Circles represent means ± SEM. Histograms represent means ± SEM. *P < 0.05 *+/+* versus *-/-* group (Repeated Measures ANOVA on Ranks). ** Denotes P < 0.01 for comparison of *-/-* to *+/+* (Two-way ANOVA on Ranks with Dunn’s Post Hoc).

Supplemental Figure IV



Supplemental figure IV: PAR2 deficiency reduces atherosclerosis irrespective of body weight. Male *Ldlr*^{-/-} mice that were *Par2*^{+/+} and *-/-* (n = 9 each) were fed a low-fat (4.3% fat wt/wt) modified AIN76A semisynthetic diet containing 0.15% cholesterol. (A) Biweekly weight gain in response to semisynthetic diet in *Ldlr*^{-/-}/*Par2*^{+/+} and *Ldlr*^{-/-}/*Par2*^{-/-}. Circles represent means \pm SEM. (B) Percent lesion area of the aortic sinus where circles represent individual measurements, diamonds are means \pm SEM. * Denotes P < 0.001 for comparison of *-/-* to *+/+* (two-tailed Student's t-test).

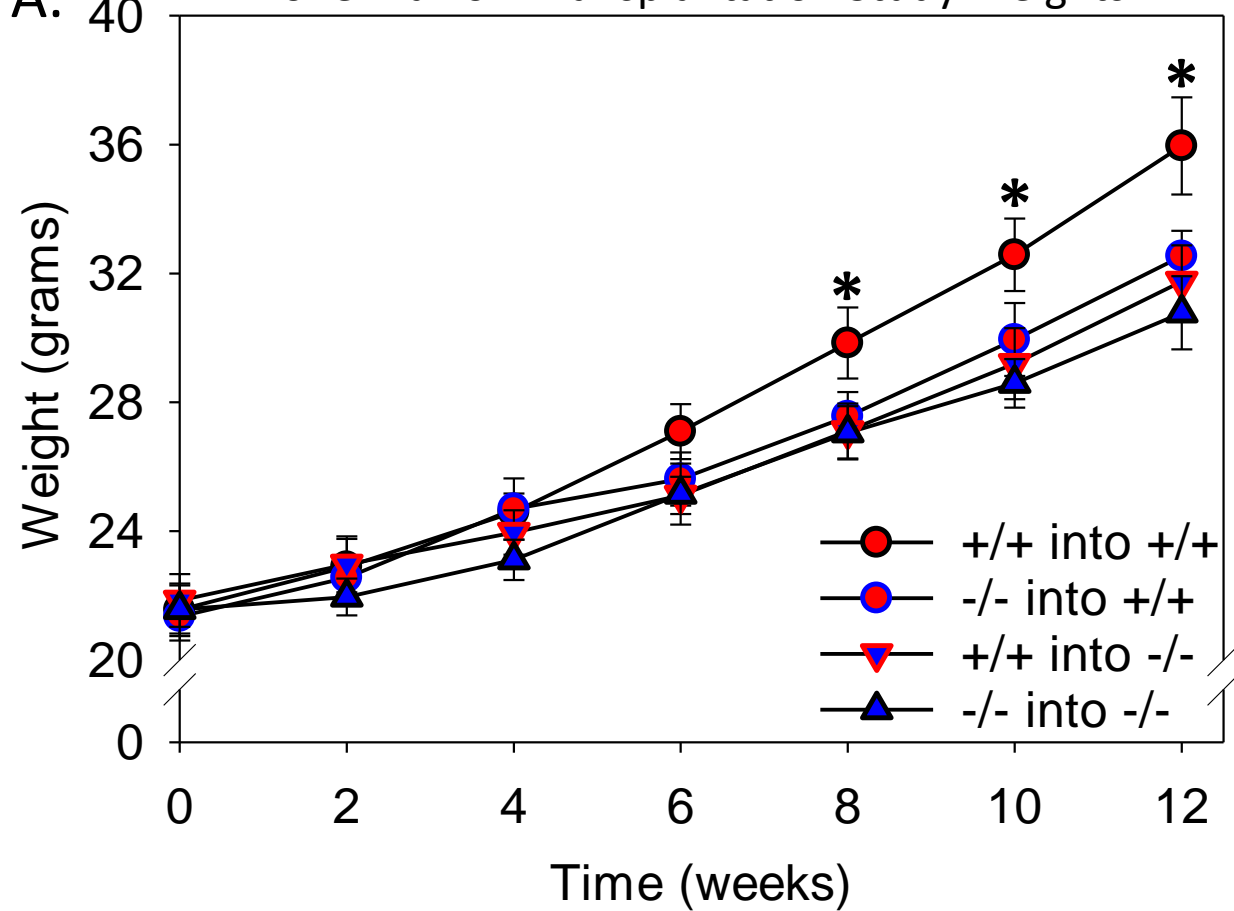
Supplemental Figure V



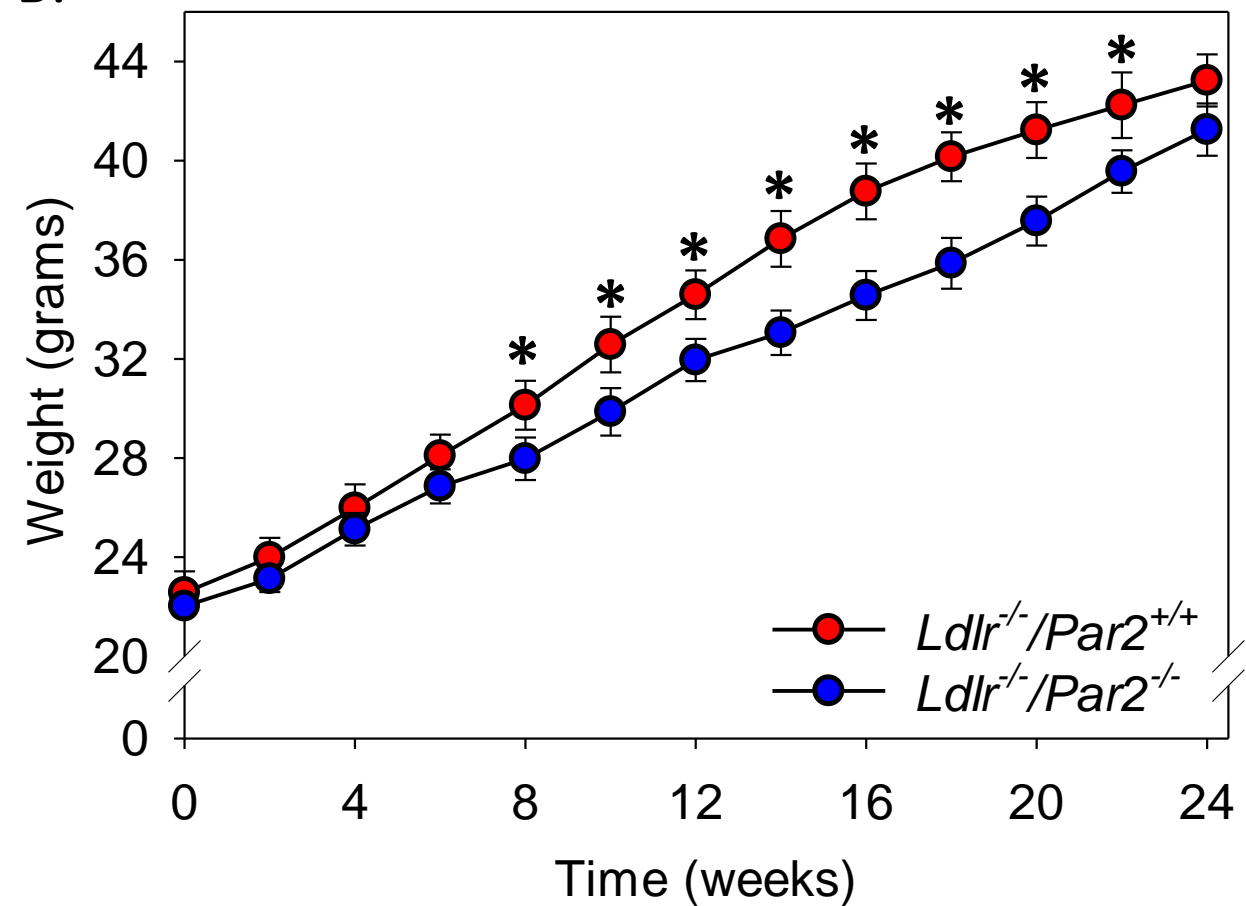
Supplemental figure V: PAR1 deficiency does not affect the formation of early atherosclerosis. Male *Ldlr*^{-/-} mice that were *Par1*^{+/+} and *-/-* (n = 15 – 16) were fed a high fat/cholesterol diet for 12 weeks. (A) Percent lesion area of the aortic sinus and (B) en face area of the aortic arch where circles represent individual measurements, diamonds are means ± SEM. (D – E) Representative images of Oil-red O stained aortic sinus and (C, F – G) representative images and quantification of (G) CD68 stained aortic sinuses.

Supplemental Figure VI

A. Bone Marrow Transplantation Study Weights

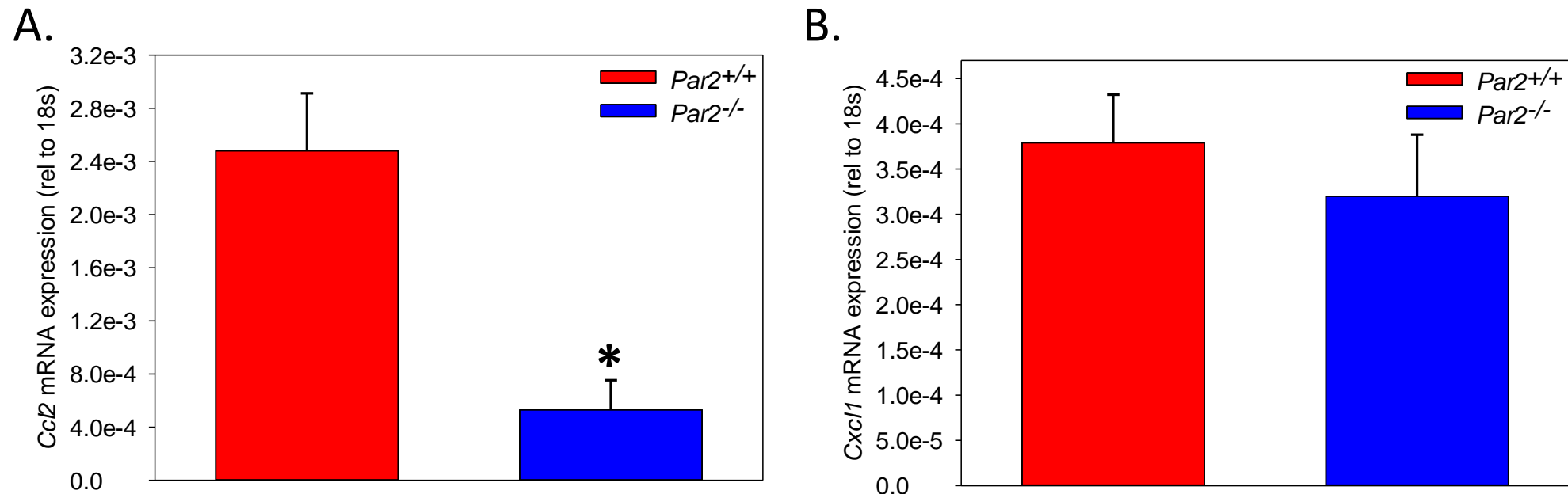


B. 24 Week Atherosclerosis Study Weights



Supplemental figure VI: PAR2 deficiency reduces weight gain in bone marrow transplant and chronic atherosclerosis. Male *Ldlr*^{-/-}/*Par2*^{+/+} and *Ldlr*^{-/-}/*Par2*^{-/-} mice (8-10 weeks old, n = 10 – 12 each group) were irradiated (1300 rads split into two equal doses four hours apart) and repopulated with *Par2*^{+/+} or *-/-* bone marrow. Mice were allowed to recover for 5 weeks, and then fed a Western diet for 12 weeks. (A) Biweekly weight gain of all four chimeric groups. Circles and diamonds represent means ± SEM. *P < 0.05 +/+ into +/+ group versus all other groups. Repeated Measures ANOVA on Ranks. (B) Biweekly weights of male *Ldlr*^{-/-} mice (8-12 weeks) that were *Par2*^{+/+} and *-/-* (n = 12) were fed a high fat/cholesterol diet for 24 weeks. Circles represent means ± SEM. *P < 0.05 +/+ into +/+ group versus all other groups. Repeated Measures ANOVA on Ranks.

Supplemental Figure VII



Supplemental figure VII: Basal *Ccl2* mRNA is decreased with PAR2 deficiency. Mouse aortic arch VSMCs were isolated from *Par2*^{+/+} and *Par2*^{-/-} mice (n = 10 each) and mRNA extracted. (A) *Ccl2* and (B) *Cxcl1* mRNA was quantified and extrapolated to 18S rRNA expression. Histograms represent mean ± SEM. * Denotes P < 0.05 for comparisons of -/- to +/+ mice; Mann Whitney Rank Sum.