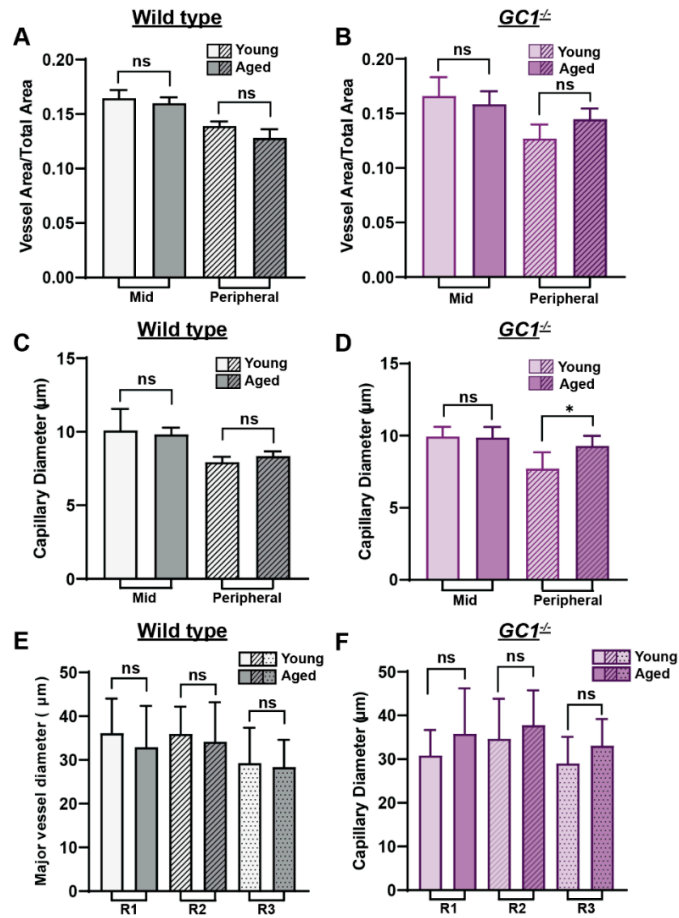
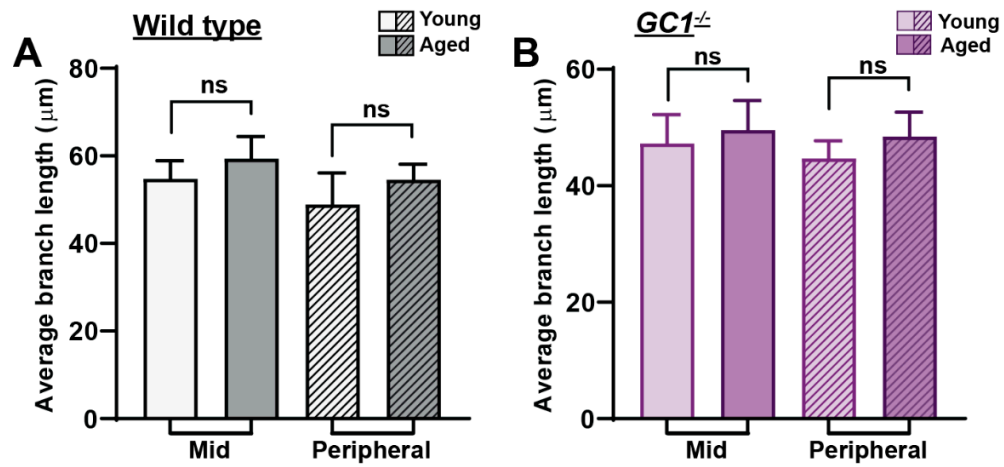


**Supplemental Figure S1. REAVER Pipeline.** (A) Representative raw fluorescence image file of whole-mount retina labeled with isolectin B4. The white boxes represent proximal and distal ROIs isolated for REAVER processing. (B) ROI with background subtraction. (C) Binarized ROI for input into REAVER. (D) Example REAVER segmentation output from yellow ROI in (C). Segmentation outline is in yellow-green and the white segments trace the center of the vessel. Scale bars in (A,B) are 500  $\mu\text{m}$ ; in (D), the scale bar indicates 100  $\mu\text{m}$ .



**Supplemental Figure S2.** Comparison of vessel phenotypes between young and aged Wt and *GC1*<sup>-/-</sup> mice. **(A)** No significant differences were found between the total vessel areas of young and aged Wt mice in mid ( $p=0.669$ ) and peripheral retina ( $p=0.070$ ). **(B)** No significant differences were found between the total vessel areas of young and aged *GC1*<sup>-/-</sup> mice in mid ( $p=0.718$ ) and peripheral ( $p=0.107$ ) retina. **(C)** No significant differences in capillary diameters were observed in young and aged Wt mice in mid ( $p=0.917$ ) and peripheral retina ( $p=0.784$ ). **(D)** In *GC1*<sup>-/-</sup> mice, there is no significance in capillary diameter between young and old mice in mid retina ( $p=0.999$ ), however, in peripheral retina, there is a progressive dilation of capillaries between young and aged mice ( $*p=0.011$ ). **(E)** No significant differences in major vessels were seen between young and aged Wt animals at R1 ( $p=0.868$ ), R2 ( $p=0.994$ ) or R3 ( $p=0.993$ ). **(F)** Similarly, in *GC1*<sup>-/-</sup> mice, there were no significant differences in major vessel diameters between young and old mice at R1 ( $p=0.388$ ), R2 ( $p=0.899$ ), or R3 ( $p=0.681$ ). All data plotted as means  $\pm$  S.D. Statistical analysis performed: Kruskal–Wallis one-way ANOVA.



**Supplemental Figure S3.** Comparison of vessel branch length between young and aged Wt and *GC1<sup>-/-</sup>* mice. **(A)** No significant differences were found between the average branch length of young and aged Wt mice in mid ( $p=0.639$ ) and peripheral retina ( $p=0.481$ ). **(B)** Similarly, no significant differences were found between the average branch length of young and aged Wt mice in mid ( $p=0.860$ ) and peripheral retina ( $p=0.611$ ). All data plotted as means  $\pm$  S.D. Statistical analysis performed: Kruskal–Wallis one-way ANOVA.