Electronic Supplementary Material (ESI) for Metallomics.

Supplementary Information

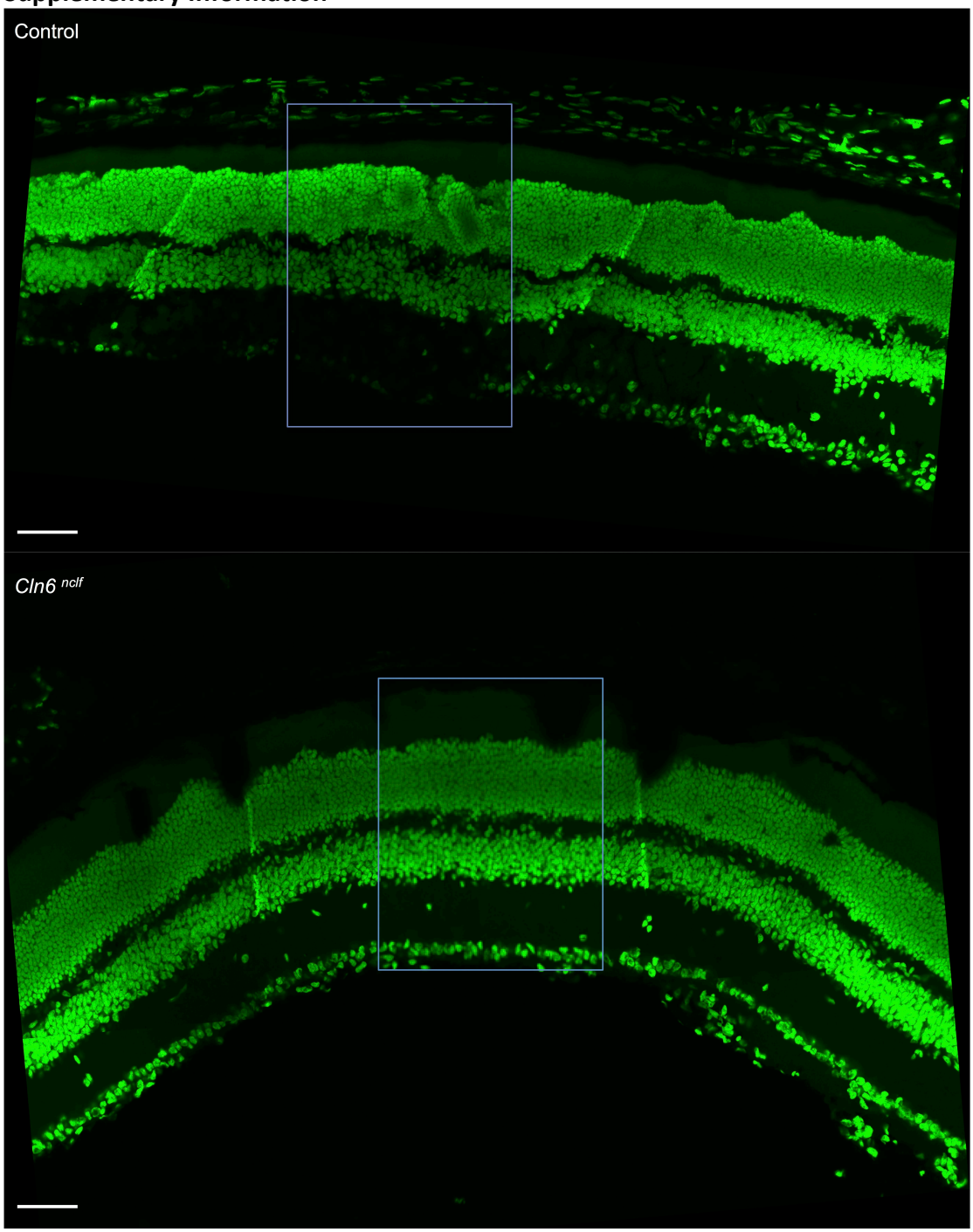

Figure S1. Morphology is preserved in retinal sections post XFM imaging. Eyes were dissected from 1- month old control (A) and *Cln6*^{nclf} mice (B), snap frozen and cryoprotected in OCT. 30µm sections of retina were placed onto SiN XFM windows and exposed to 12.9keV X-rays at the Australian Synchrotron XFM beamline. A representative image corresponding to retinas on SiN windows stained with Sytox-green post XFM analysis, demonstrating preserved retinal morphology. The blue box corresponds to the region that was imaged by XFM. Scale bar = 50µm.

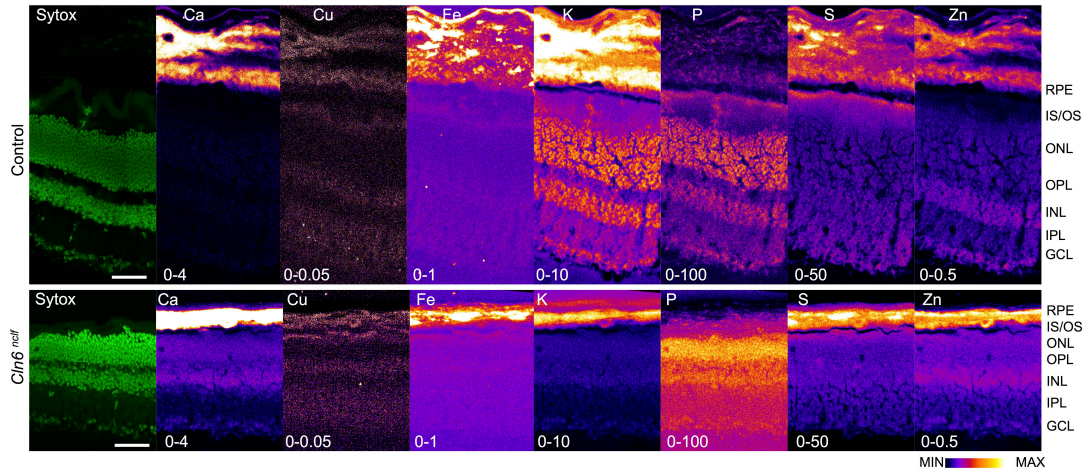

Figure S2. Elemental distribution in 8-month old control and *Cln6*^{nclf} mice. A representative set of elemental maps from an 8-month-old control (A) and *Cln6*^{nclf} mouse (B) are shown. The first image in (A) and (B) corresponds to retinas on SiN windows stained with Sytox-green post XFM analysis. Elemental distribution is illustrated as a heat-colourised map, the heat map scale is shown at the bottom of the figure. The minimum and maximum concentrations (µg/cm^2) of each element are shown in each panel. Retinal regions: RPE, retinal pigment epithelium; OS/IS, outer and inner segments of photoreceptors; ONL, outer nuclear layer; OPL, outer plexiform layer; INL, inner nuclear layer; IPL, inner plexiform layer; GCL, ganglion cell layer. Scale bar = 50µm throughout.

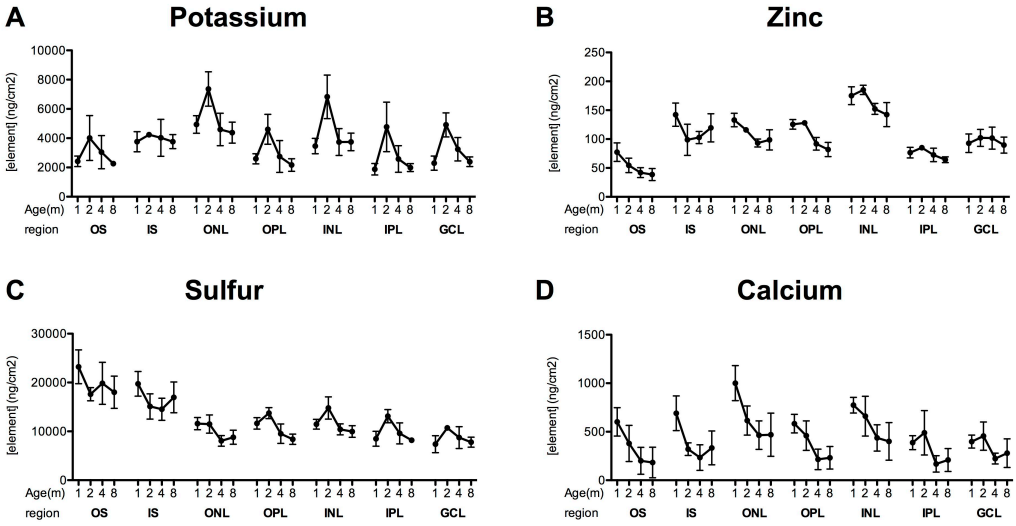

Figure S3. K, Zn, S and Ca distributions are unaltered with age in control mice. Merged Ca, P, Zn elemental maps were used as a guide for the generation of masks for individual retinal layers as described in Figure 2. Graphs are mean ± SEM of concentrations of K (A), Zn (B), S (C) and Ca (D) in 1-, 2-, 4-, and 8- month control mice. Statistical analysis was performed with GraphPad Prism software, using 2-Way ANOVA and Bonferroni post-tests.

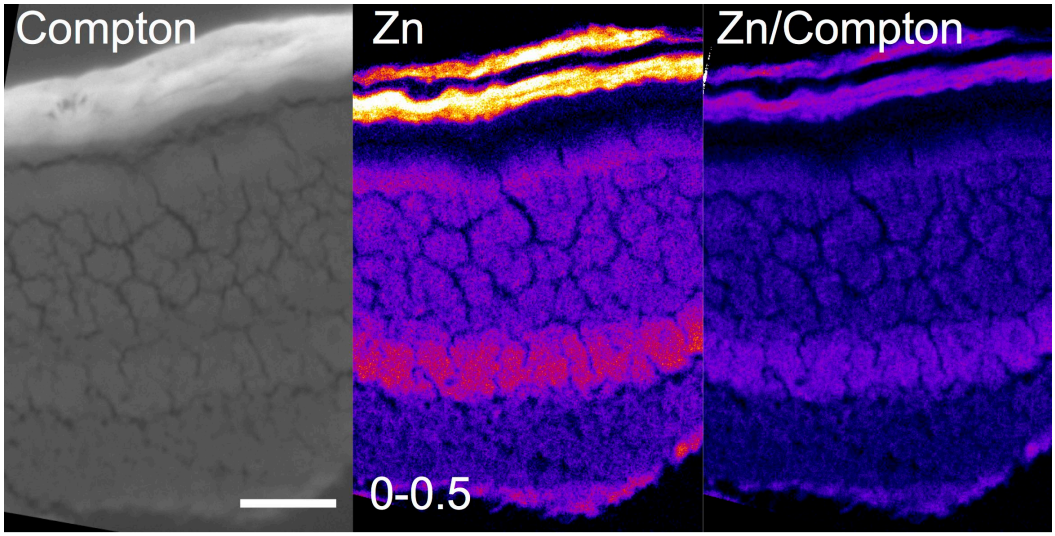

Figure S4. Tissue density variations do not account for elemental distribution in the retina. Grayscale-colored image of inelastic scatter (Compton) of incident photons is a guide for elemental density of tissue. Zn distribution and Zn/Compton ratio is illustrated as a heat-colourised map. The minimum and maximum areal density (μg/cm^2) of Zn are shown. Scale bar = 50μm.

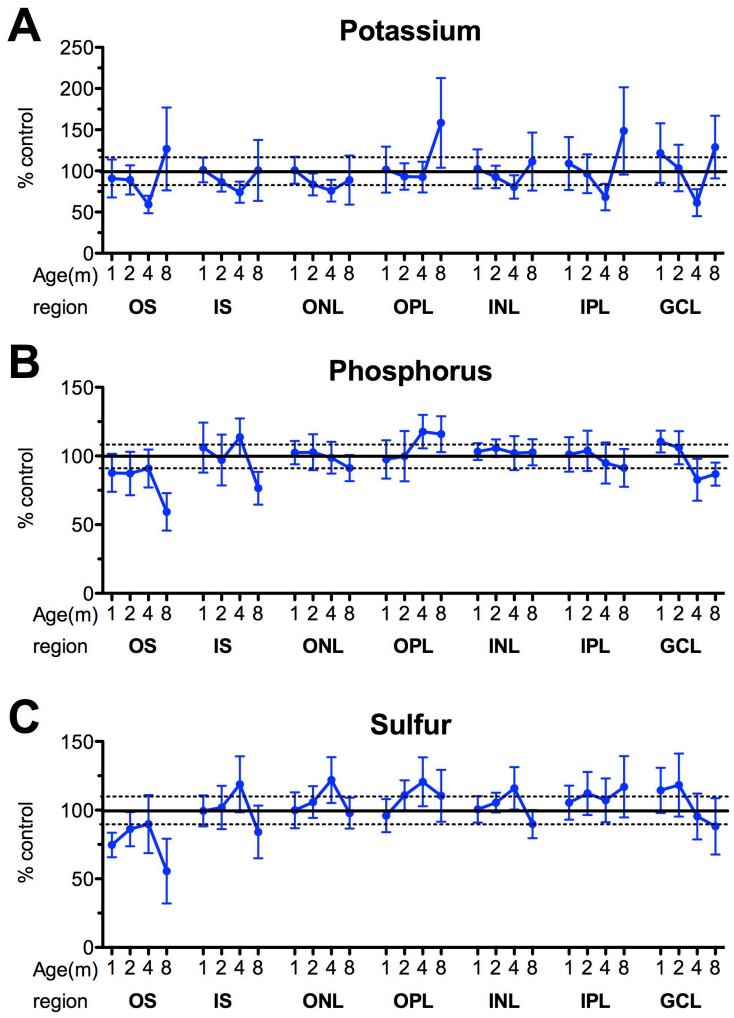

Figure S5. K, S, P distributions are unaltered in *Cln6*^{nclf} mice. A-C) Graphs are mean ± SEM percentages of K (A), P (B) and S concentrations (C) in 1-, 2-, 4-, and 8- month *Cln6*^{nclf} mice compared to the mean (solid line) ± SEM (dotted lines) in control mice. Statistical analysis was performed with GraphPad Prism software, using 2-Way ANOVA and Bonferroni post-tests.