

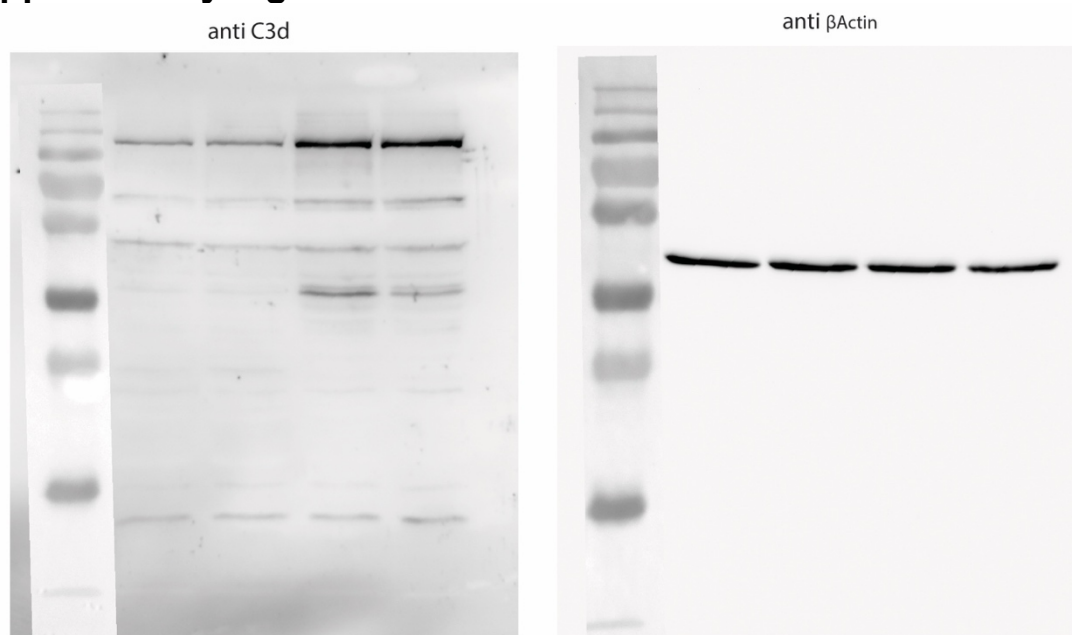
Supplementary information

Moss-derived human complement factor H modulates retinal immune response and attenuates retinal degeneration

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Supplementary Figures 1-8

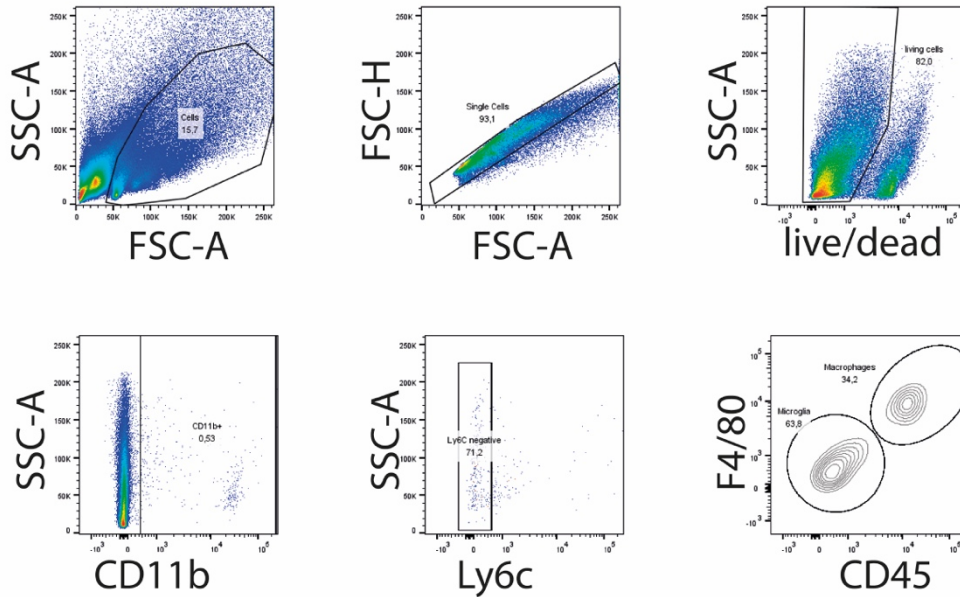
Supplementary Figure 1



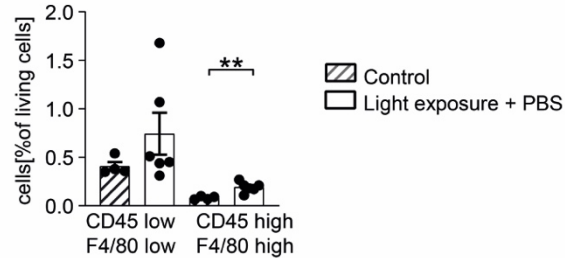
Supplementary Figure 1: Uncropped blots from Figure 2.

Supplementary Figure 2

A

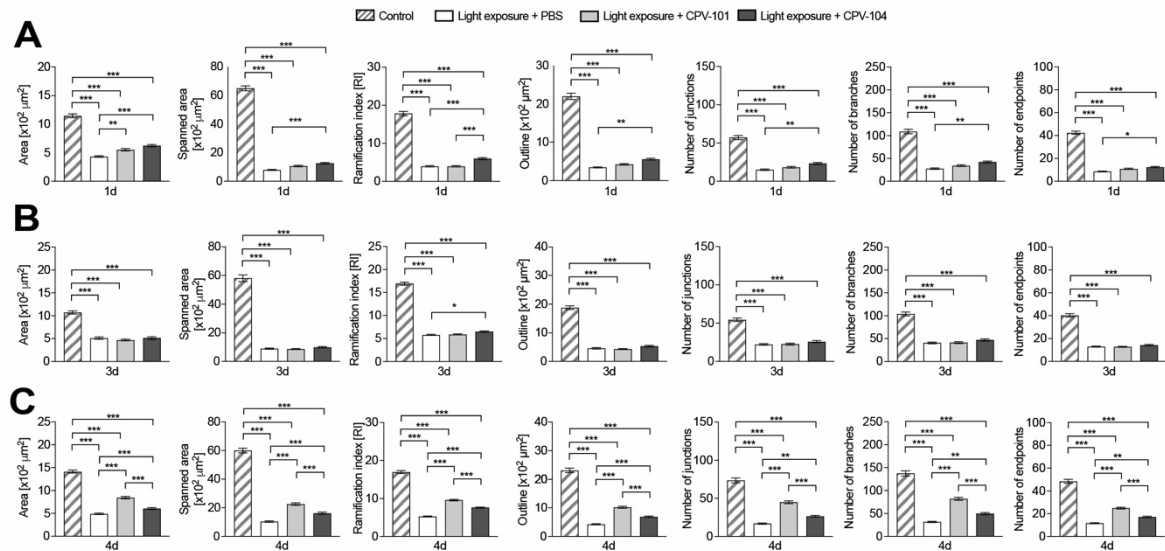


B



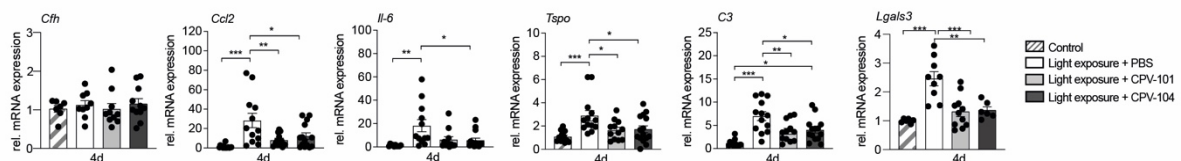
Supplementary Figure 2: Increased numbers of microglia in the retina after light exposure. **A** Representative gating strategy on monocyte-derived macrophages (CD45^{high} and F4/80^{high}) and microglia (CD45^{low} and F4/80^{low}) in the retina. **B** Percentage of CD45^{low} and F4/80^{low} and CD45^{high} and F4/80^{high} cells of all living cells in control retinas and retina three days after light exposure. Data show mean $\pm$ SEM; n= 4-5 mice. Unpaired t-test; *P $\leq$ 0.05, **P $\leq$ 0.01 and ***P $\leq$ 0.001.

Supplementary Figure 3



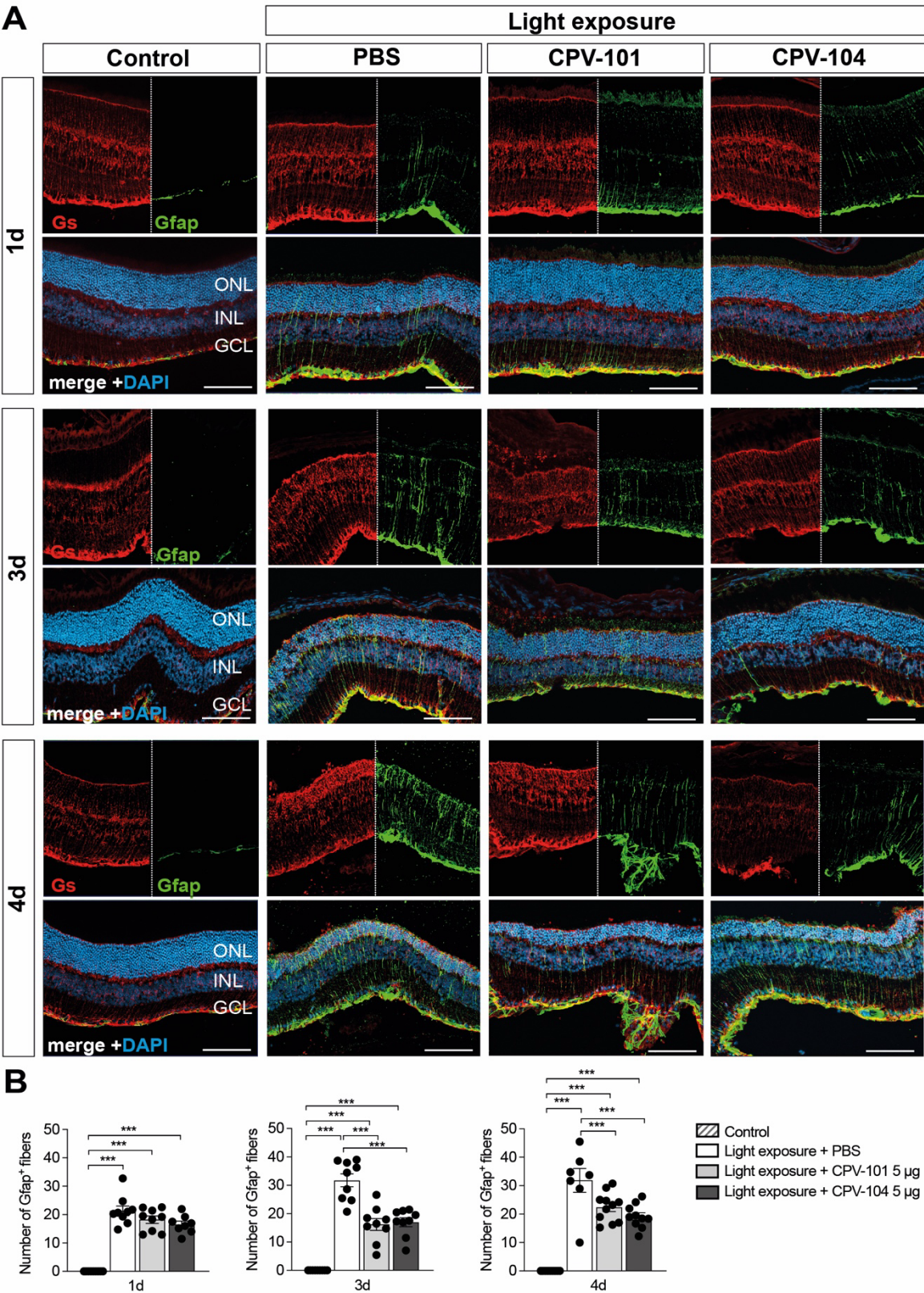
Supplementary Figure 3: Moss-derived recombinant human CFH variants CPV-101 and CPV-104 counter-regulate microglial morphological changes in light-exposed retinas. A-C Quantification of Iba1⁺ area, spanned area, outline, spanned outline, ramification index, number of branches; junctions and endpoints per cell one (A), three (B) and four (C) day after light exposure. Data show mean $\pm$ SEM; n= 86-237 cells out of 8-9 retinas. One-way ANOVA followed by Sidak's multiple test; *P $\leq$ 0.05, **P $\leq$ 0.01 and ***P $\leq$ 0.001.

Supplementary Figure 4



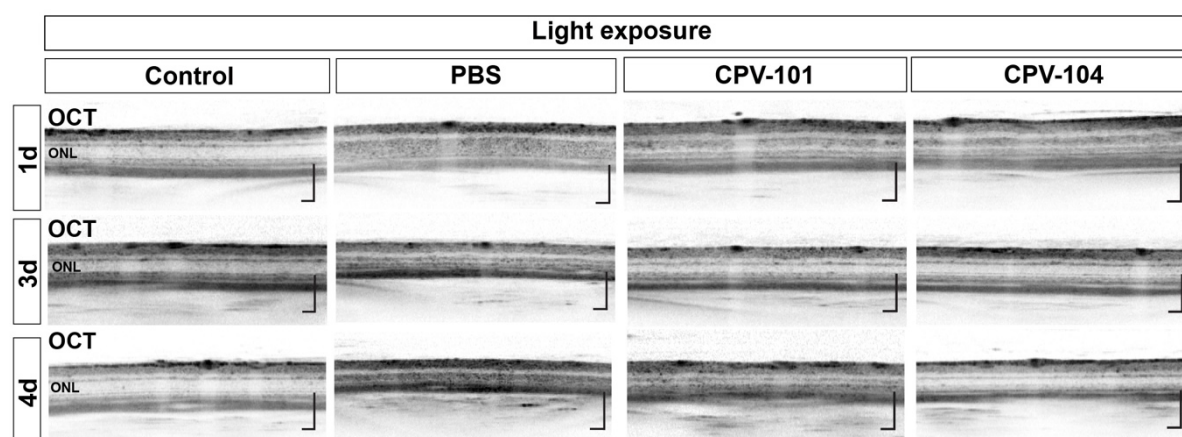
Supplementary Figure 4: Moss-derived recombinant human CFH variants CPV-101 and CPV-104 reduce pro-inflammatory marker expressions in light-exposed retinas. qRT-PCR was performed from retinas and of light-damaged and control mice four days after light exposure. Data show mean $\pm$ SEM; n= 10-14 retinas. One-way ANOVA following Sidak's multiple comparison test; *P $\leq$ 0.05, **P $\leq$ 0.01 and ***P $\leq$ 0.001.

Supplementary Figure 5



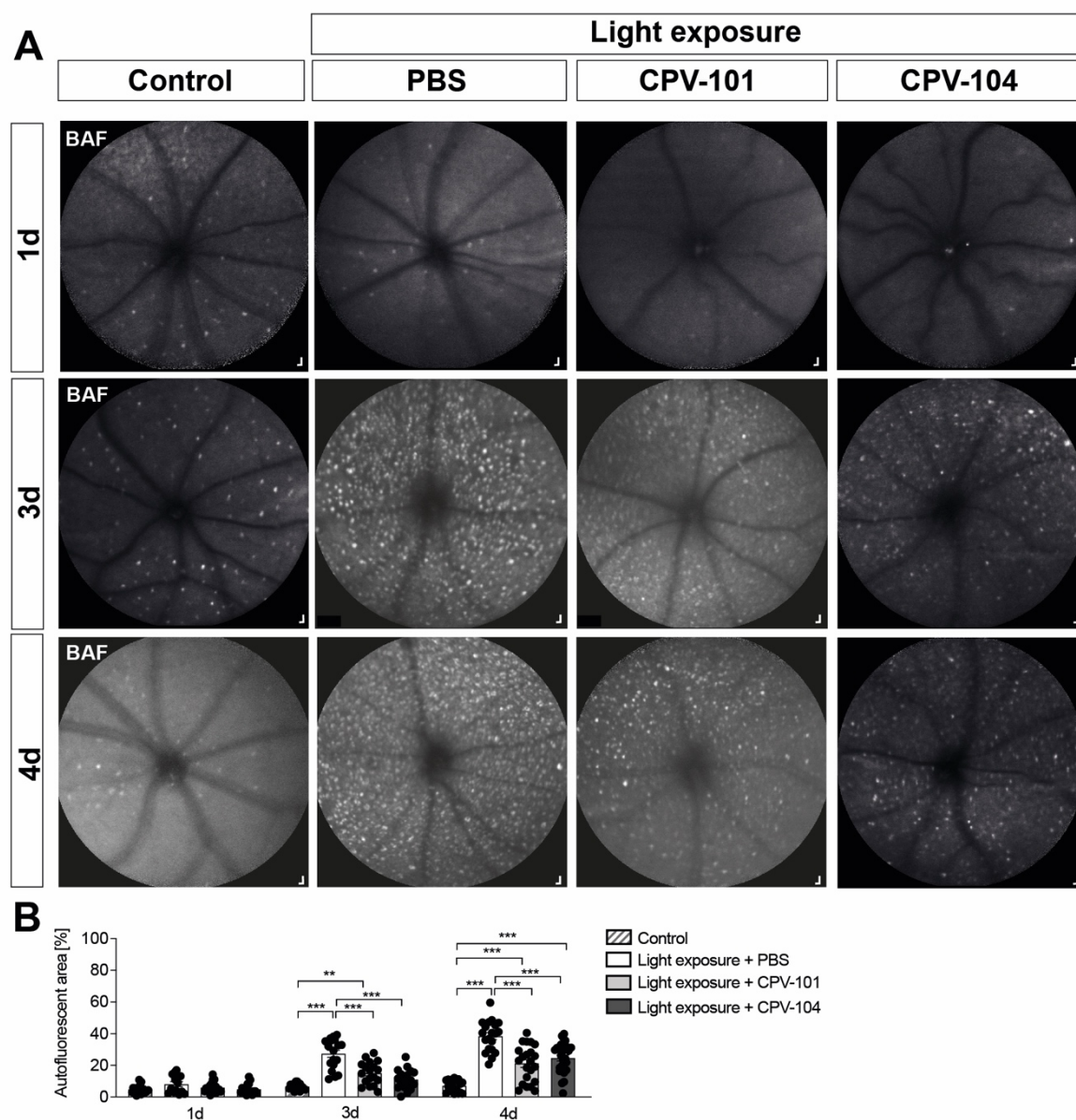
Supplementary Figure 5: Moss-derived recombinant human CFH variants CPV-101 and CPV-104 reduce Müller glia reactivity. **A** Representative images from glutamine synthetase (Gs)- and glial fibrillary acidic protein (Gfap)-stained cryosections from control and light-exposed mice at indicated time points. Scale bar: 100 μ m. ONL, outer nuclear layer; INL, inner nuclear layer and GCL, ganglion cell layer. **B** Analysis of GFAP⁺ stress fibers. Data show mean $\pm$ SEM; n= 7-11 retinas. One-way ANOVA following Sidak's multiple comparison test; *P $\leq$ 0.05, **P $\leq$ 0.01 and ***P $\leq$ 0.001.

Supplementary Figure 6



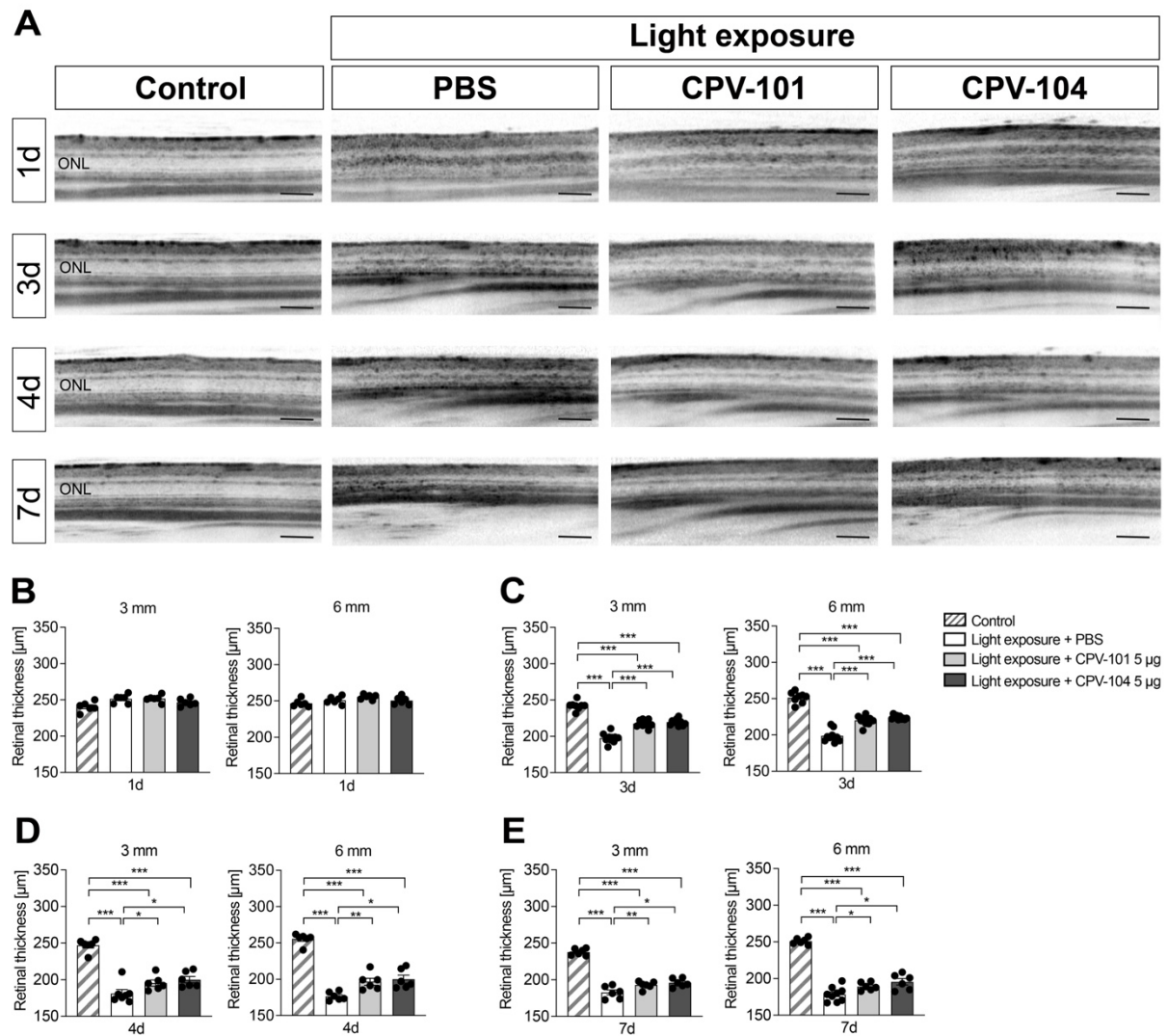
Supplementary Figure 6: Moss-derived recombinant human CFH variants CPV-101 and CPV-104 attenuate light-induced retinal degeneration. Enlarged OCT scans from Figure 4. Scale bar: 200 μ m. ONL, outer nuclear layer.

Supplementary Figure 7



Supplementary Figure 7: Moss-derived recombinant human CFH variants CPV-101 and CPV-104 reduce accumulation of autofluorescent material in light-exposed mice. A Representative BluePeak autofluorescence (BAF) images from control and light-exposed mice at indicated time points. Scale bar: 200 μ m. **B** Quantification of autofluorescent area. Data show mean $\pm$ SEM; n = 18-27 eyes. One-way ANOVA followed by Sidak's multiple comparison test; * $P \leq 0.05$, ** $P \leq 0.01$ and *** $P \leq 0.001$.

Supplementary Figure 8



Supplementary Figure 8: Moss-derived recombinant human CFH variants CPV-101 and CPV-104 attenuate light-induced retinal degeneration. **A** Representative OCT scans at indicated time points from control and light-exposed mice. Scale bar: 200 μm . ONL, outer nuclear layer. **B-E** Quantification of retinal thickness in the central (circle diameter 3 mm) and peripheral area (circle diameter 6 mm) one day (**B**), three days (**C**), four days (**D**) and seven days (**E**) post light exposure. Data show mean $\pm$ SEM; $n = 6-9$ eyes. One-way ANOVA followed by Sidak's multiple comparison test; * $P \leq 0.05$, ** $P \leq 0.01$ and *** $P \leq 0.001$.