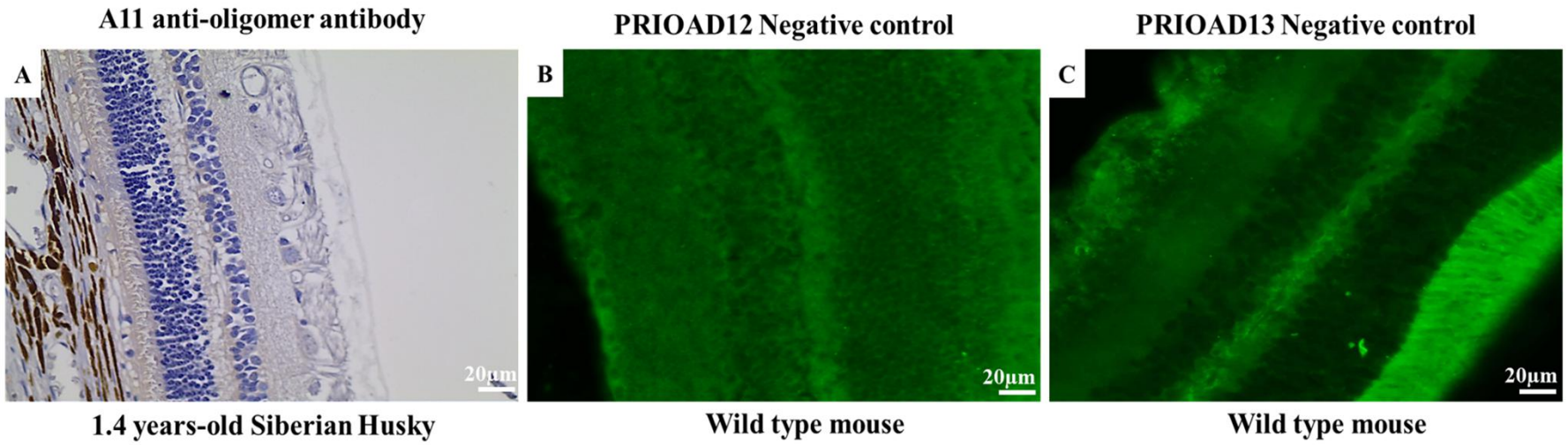
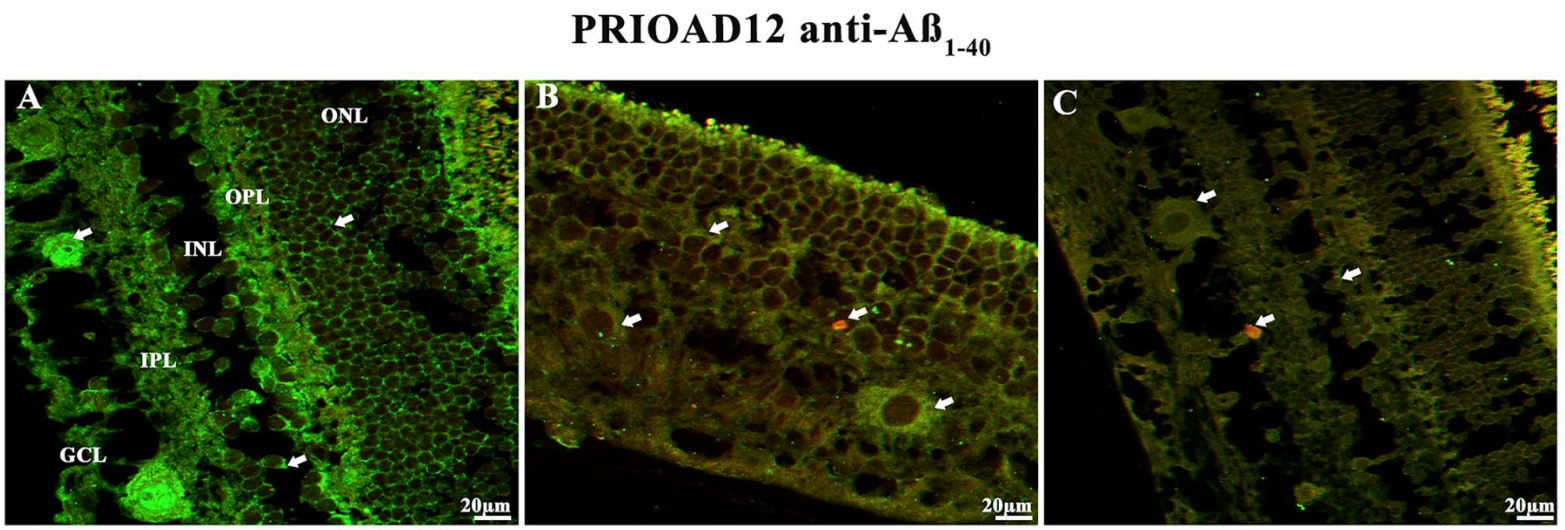
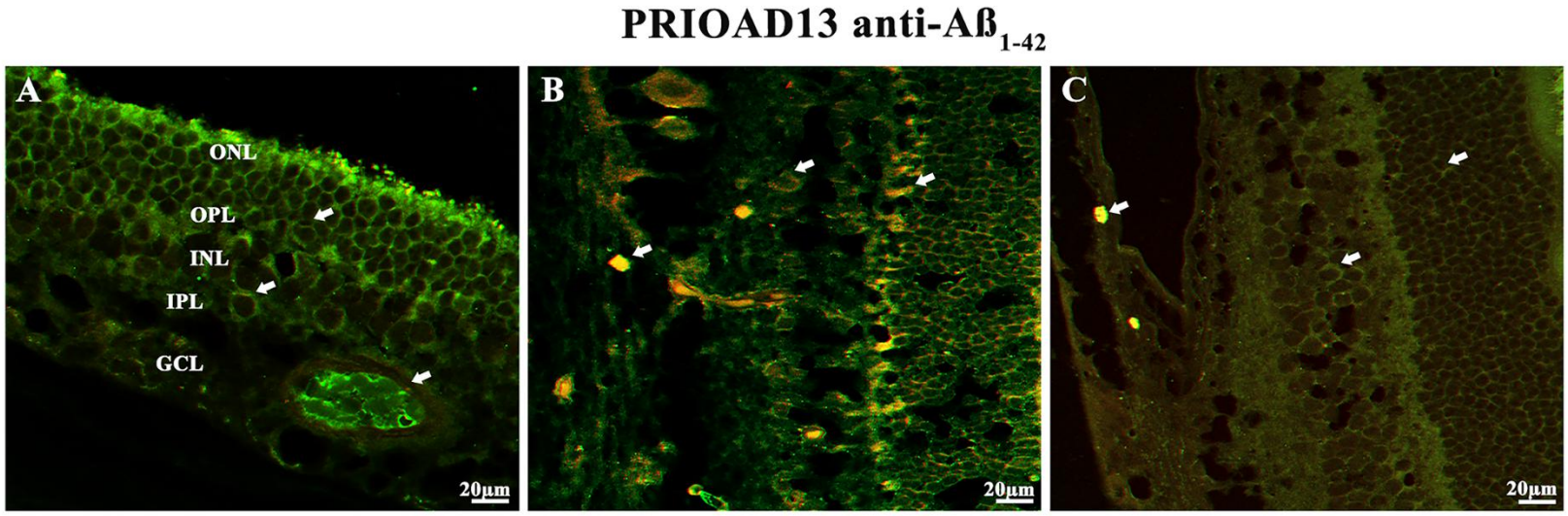


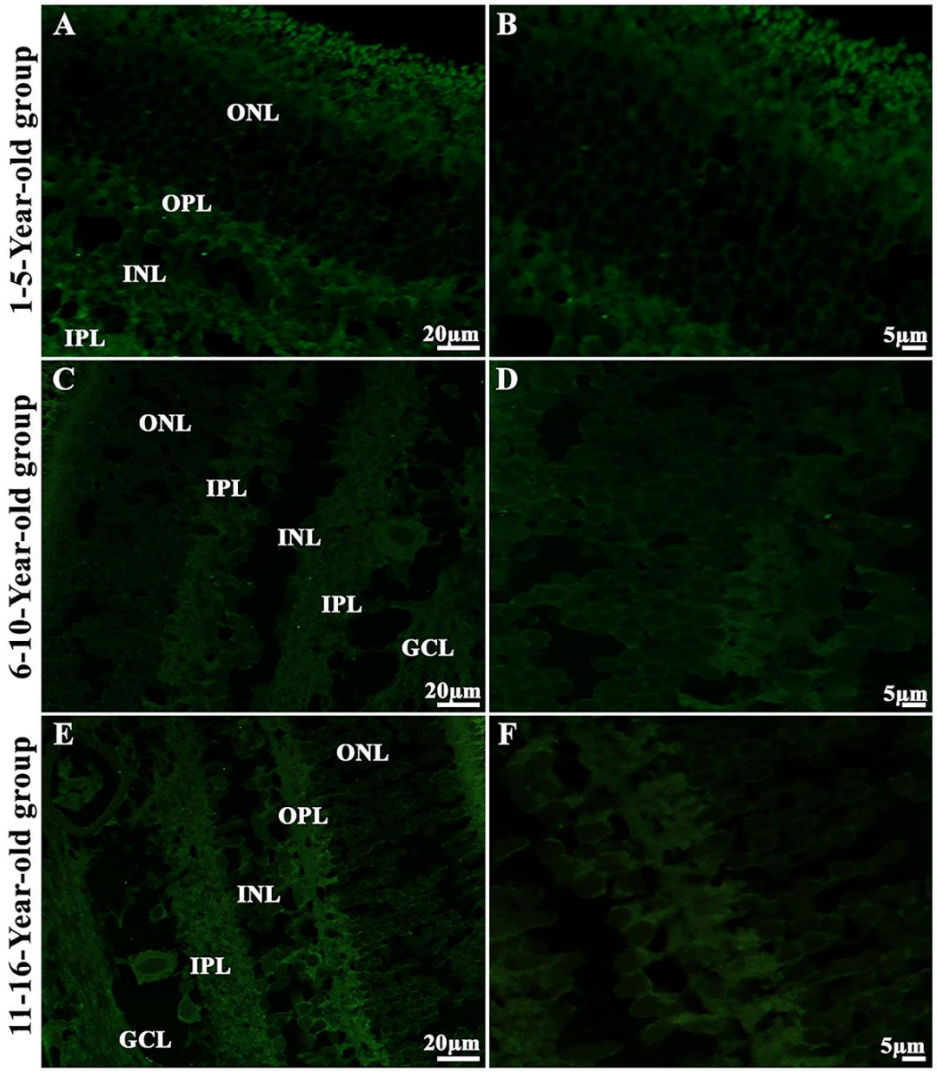
Supplementary Figure 1. Immunohistochemistry staining of retinal amyloid-beta oligomers in a young dog and immunofluorescence staining of retinal amyloid-beta oligomers in wild-type mice. (A) A 1.4-year-old male Siberian husky that did not display any A11 positive stain with immunohistochemistry staining. Retinal staining with anti-$A\beta_{40}$ (PrioAD12) and anti-$A\beta_{42}$ (PrioAD13) camelid-derived single domain antibody (green) of a 3-month-old wild-type mouse (B and C). $A\beta_{40}$ and $A\beta_{42}$ oligomers were not identified in the retinal layers (40X) of a 3-month-old wild-type mouse (n = 6).



Supplementary Figure 2. Immunofluorescence (IF) detection and co-localization of retinal amyloid beta oligomers and amyloid-beta plaques in the dogs of the young (1-5-year-old), (6-10-year-old), and older (11-16-year-old) dogs. Retinal co-staining of oligomers with anti-$A\beta_{40}$ (PrioAD12) camelid-derived single domain antibodies and plaques with anti-Aβ (4G8) antibody of a 3-year-old German shepherd, a 9-year-old Cocker spaniel, and a 12-year-old German shepherd dog respectively (A-C). Co-localization of $A\beta_{40}$ oligomer and Aβp was not observed in the retinal layers of a 3-year-old German shepherd (Aβo was present - white arrows 40X). Widespread co-localization was observed in the (B) retinal layers (white arrows, 40X) of a 9-year-old Cocker spaniel and a 12-year-old German shepherd dog, respectively.

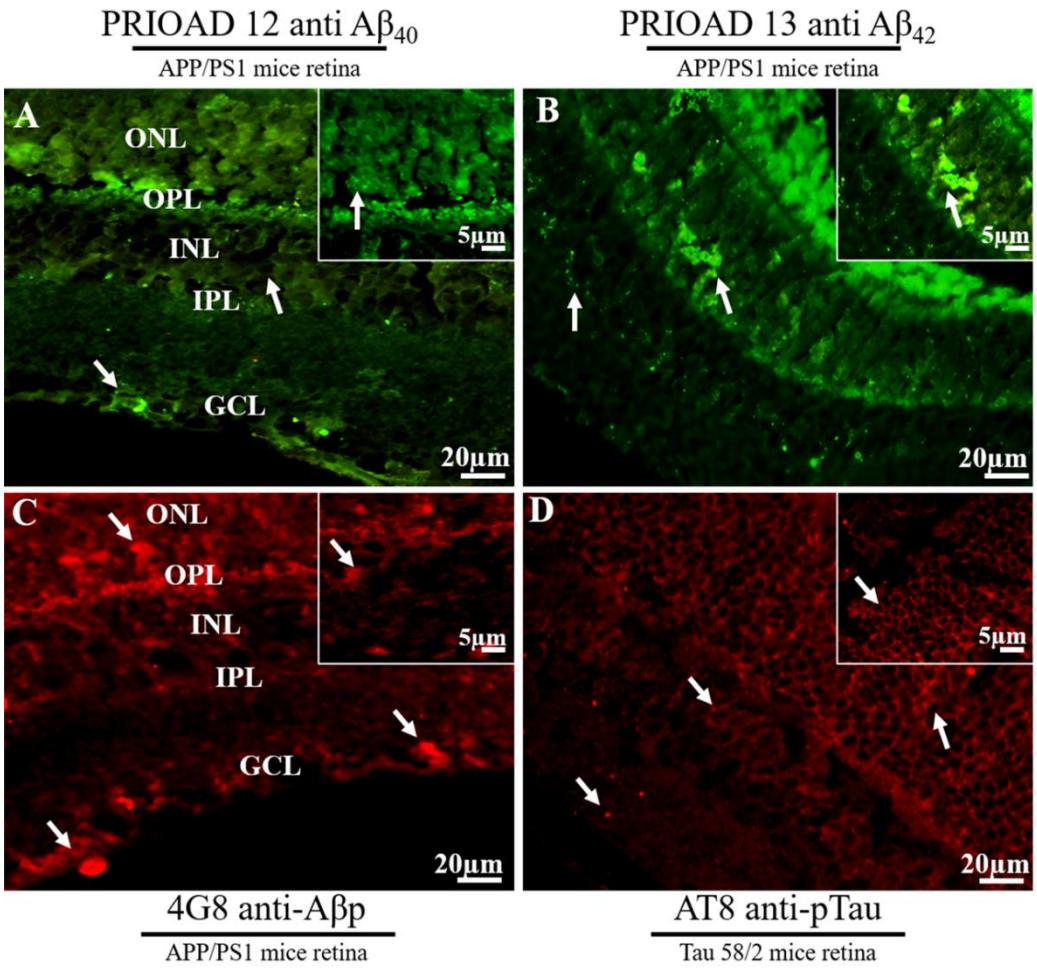


Supplementary Figure 3. Immunofluorescence (IF) detection and co-localization of retinal amyloid beta oligomers and amyloid-beta plaques in the dogs of the young (1-5-year-old), (6-10-year-old), and older (11-16-year-old) dogs. Retinal co-staining of oligomers with anti-$A\beta_{42}$ (PrioAD13) camelid-derived single domain antibodies and plaques with anti-Aβ (4G8) antibody of a 3-year-old German shepherd, a 9-year-old Cocker spaniel, and a 12-year-old German shepherd dog respectively (A-C). Co-localization of $A\beta_{42}$ oligomer and Aβp was not observed in the retinal layers of a 3-year-old German shepherd (Aβo was present - white arrows 40X). Widespread co-localization was observed in the (B) retinal layers (white arrows, 40X) of a 9-year-old Cocker spaniel and a 12-year-old German shepherd dog, respectively.

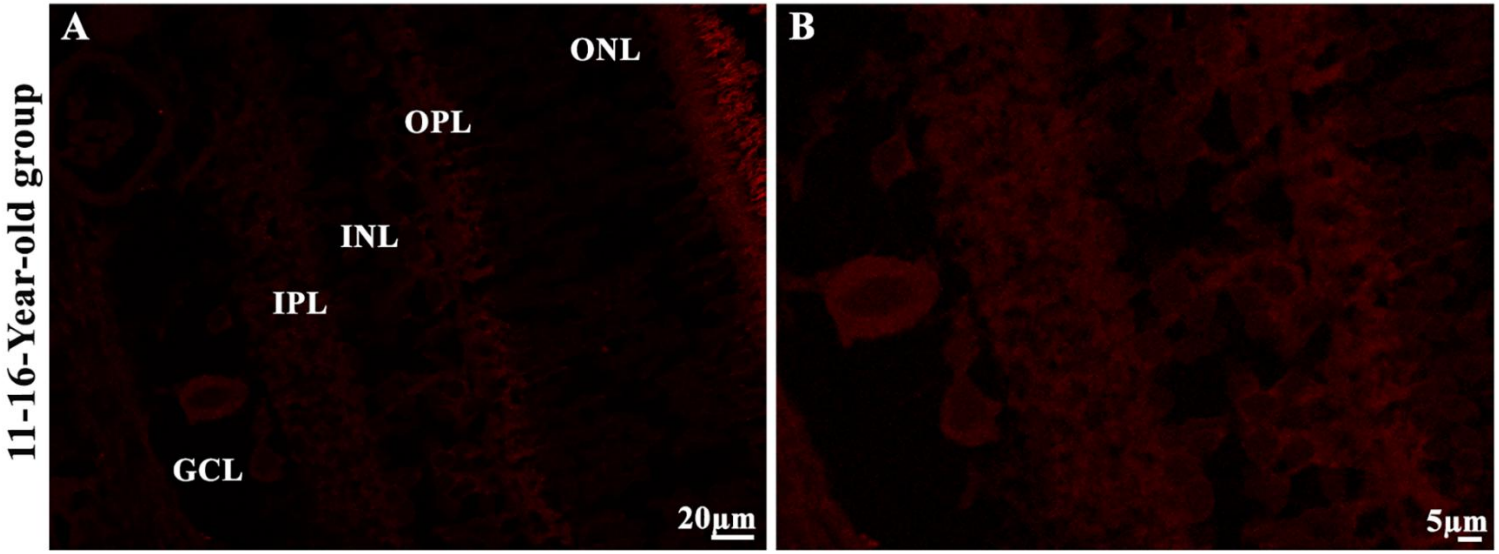


Supplementary Figure 4. Immunofluorescence staining of the retina of young (1-5-year-old), (6-10-year-old), and older (11-16-year-old) dogs.

A secondary antibody with the omission of the primary antibody was used as a negative control. (A-F) Secondary anti-IgG Texas Red (red) or FITC (green) antibodies were used in the retina of a 3-year-old German shepherd, a 9-year-old Cocker spaniel, and a 12-year-old German shepherd dog, respectively.



Supplementary Figure 5. Immunofluorescence staining of retinal amyloid beta oligomers, amyloid-beta plaques, and hyperphosphorylated tau in APP/PS1 and TAU 58/2 mice. Retinal staining with anti-$A\beta_{40}$ (PRIOAD 12), anti-$A\beta_{42}$ (PRIOAD 13) camelid-derived single domain antibody (green), and anti-Aβ (4G8) antibody (red) of a 3-month-old APP/PS1 mouse (A-C). (A and B) Widespread $A\beta_{40}$ and $A\beta_{42}$ oligomers accumulation in the retinal ganglion cell layer (GCL), inner nuclear layer (INL), and outer nuclear layer (ONL) (white arrows, 40X and insert 100X). (C) Accumulation of small rounded 4G8 positive Aβ plaques in the GCL, outer plexiform layer (OPL), and outer nuclear layer (ONL) of an 8-month-old APP/PS1 mouse (white arrows, 40X and insert 100X). (D) Accumulation of diffuse AT8 positive p-Tau deposits in the retinal ganglion cell layer (GCL), inner nuclear layer (INL), and outer nuclear layer (ONL) of the retina of a 17-month-old TAU 58/2 mouse (white arrows, 40X and insert 100X).



Supplementary Figure 6. Immunofluorescence staining of the retina of a 12-year-old German shepherd dog. A secondary antibody with the omission of the primary antibody was used as a negative control. Secondary anti-IgG Texas Red (red) in the retina. (A and B) Secondary anti-IgG Texas Red (red) in the retina (40X and 100X, respectively).