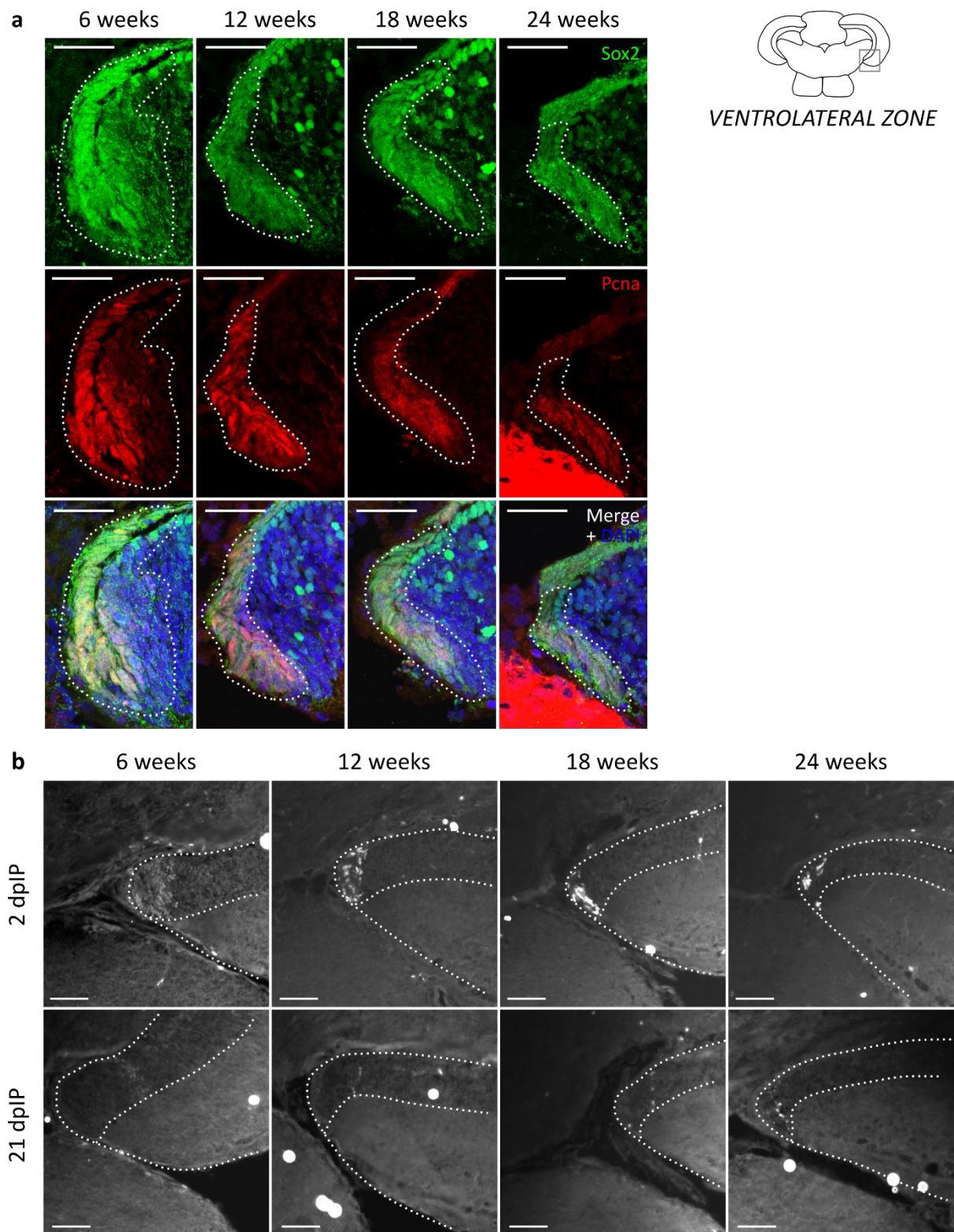
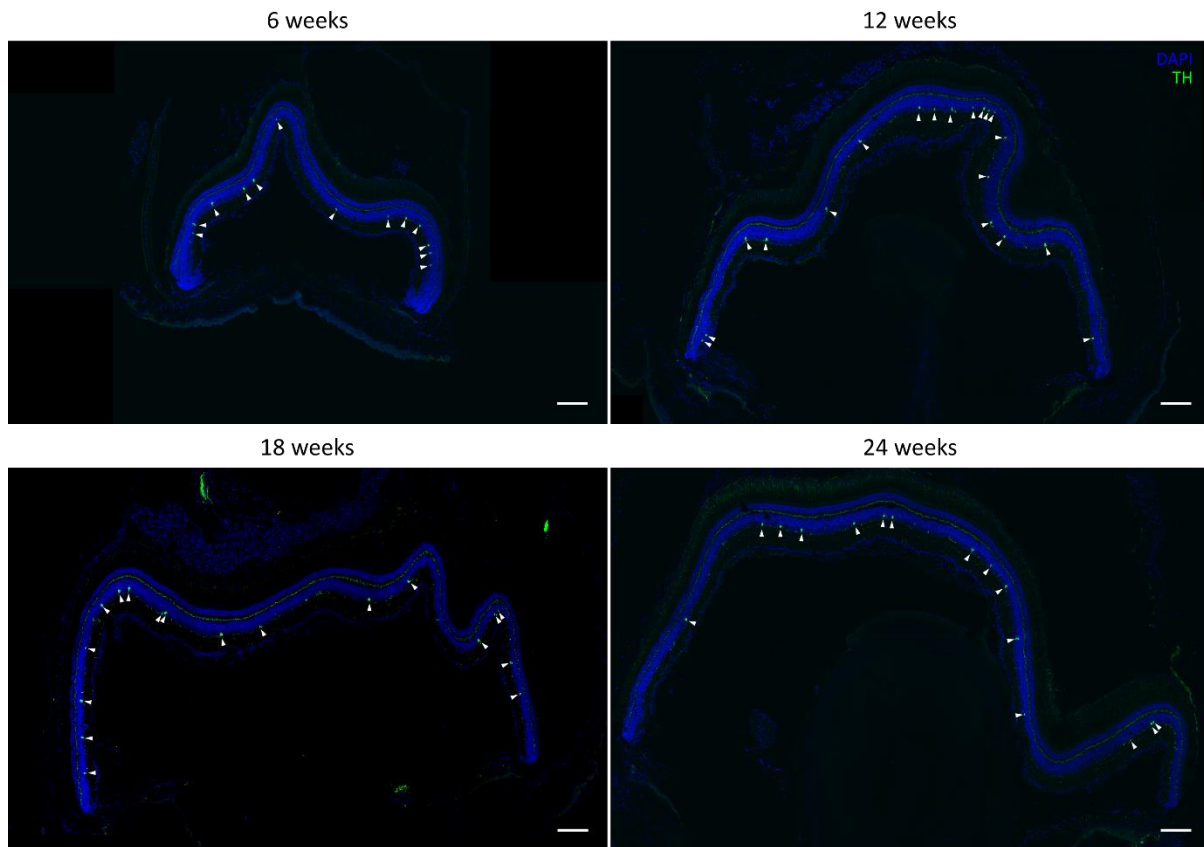


SUPPLEMENTARY FIGURES

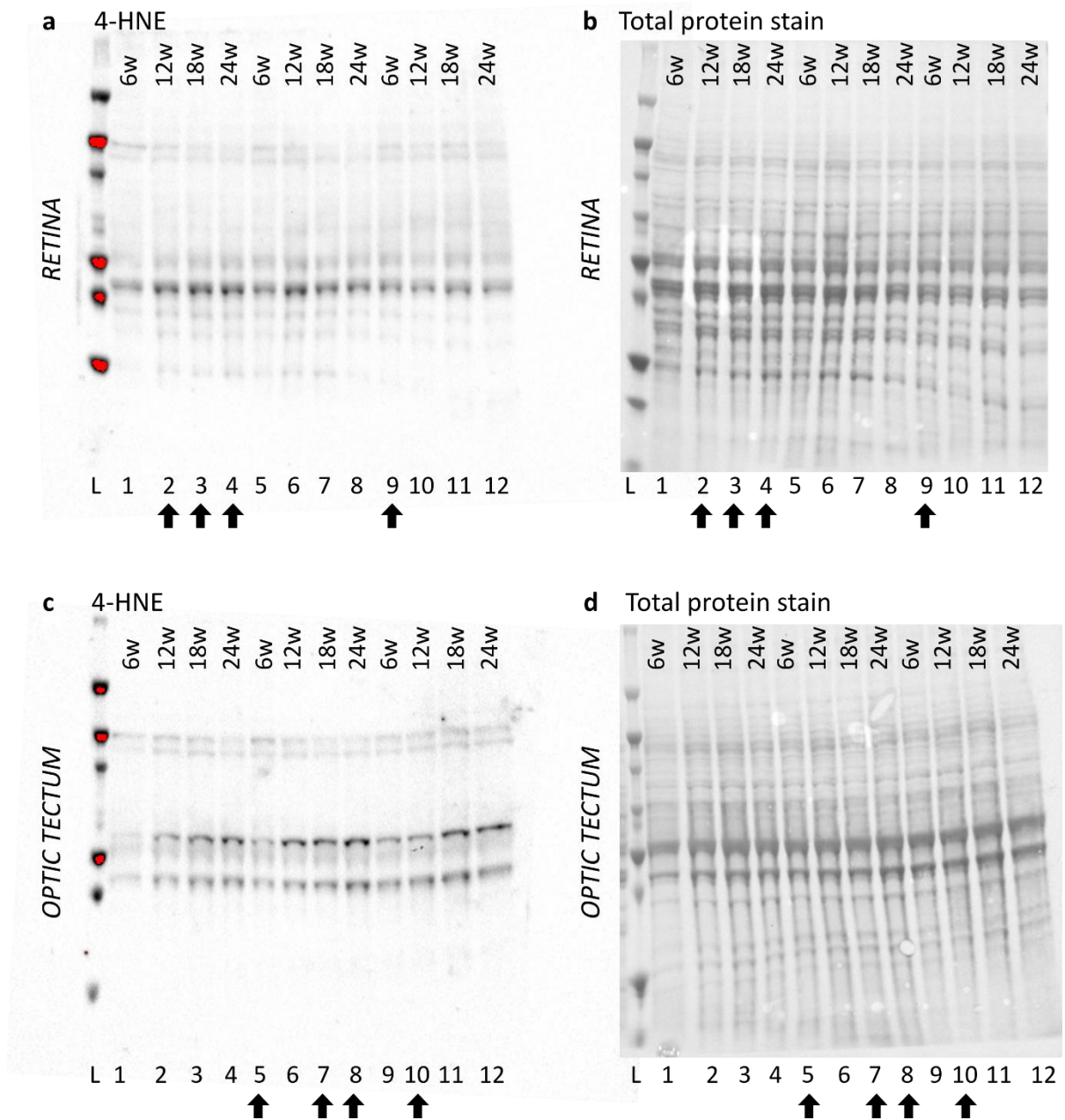


Supplementary Fig. 1 Decreased number of (proliferating) stem cells and reduced neurogenic ability in the ventrolateral mitotic zone of the aged killifish optic tectum. **a** Representative images of PcnA- and Sox2 double-stained tectal sections of fish of all four age groups, visualizing an age-associated reduction in the number of neural stem/progenitor cells (NSPCs) (Sox2-positive) as well as the number of proliferating NSPCs (Sox2 and PcnA double-positive) in the ventrolateral zone of the optic tectum.

Scale bar = 25 μm . **b** Microscopic images of tectal sections containing the ventrolateral neurogenic zone immunostained for BrdU disclose that at 2 dpIP of BrdU, a clear reduction in the number of BrdU-positive cells is observed upon aging. Following a 21 days chase, the number of BrdU-positive cells as well as the distance from the mitotic niche to the furthest BrdU-positive cell, are both reduced in older fish. Scale bar = 50 μm . Abbreviations: DAPI, 4',6-diamidino-2-phenylindole; Sox2, SRY-Box Transcription Factor 2; PcnA, Proliferating cell nuclear antigen; dpIP, days *post* intraperitoneal injection.



Supplementary Fig. 2 Decreased absolute number of dopaminergic amacrine cells in the retina of the aged killifish. Representative pictures of mid-sagittal retinal cryosections immunolabeled for TH demonstrate a visible decrease in the number of TH-expressing (displaced) amacrine cells between the age of 12 and 18w old fish (white arrowheads). Scale bar = 100 μ m. Abbreviations: DAPI, 4',6-diamidino-2-phenylindole; TH, tyrosine hydroxylase.



Supplementary Fig. 3 Full-length images of the Western blots for 4-HNE. **a** Western blot of 4-HNE levels in the retina of killifish of different ages. **b** Total protein stain on blot with killifish retinal samples. **c** Western blot of 4-HNE levels in the optic tectum of killifish of different ages. **d** Total protein stain on blot with samples of the killifish optic tectum. For every blot: lanes 1, 5, 9 contain samples of 6w old killifish; lanes 2, 6, 10 of 12w old killifish; lanes 3, 7, 11 of 18w old killifish; and lanes 4, 8, 12 of 24w old killifish; with samples of one fish per lane. Arrows highlight lanes used in figure 2a. Abbreviations: 4-HNE, 4-hydroxynonenal; L, protein ladder; w, weeks.