Antiviral drug ganciclovir is a potent inhibitor of the proliferation of Müller glia-derived progenitors during zebrafish retinal regeneration

Shuqiang Zhang¹, Zhaoxia Mu², Chunjiao He¹, Minmin Zhou³, Dong Liu¹, Xiao-Feng Zhao⁴, Daniel Goldman⁵ and Hui Xu¹*

Supplemental Figure Legends

**Figure S1. Characterization of the Tg(1016tuba1a:GFP) line.** (A-B) Fluorescence images of the Tg(1016tuba1a:GFP) embryos at 2 days post fertilization (2 dpf) and 3 dpf. The transgene was mainly expressed in the nervous system including the brain, eye, spinal cord and lateral line neuromasts. (C) A needle-poke injury induced the transgene expression at the injury site (asterisks) in the retina of adult Tg(1016tuba1a:GFP) zebrafish at 4 dpi. The left part of the retina was intact and thus served as an uninjured control. (D) GFP+ cells also expressed Müller glia marker Glutamine synthetase (GS) at the injury site at 4 dpi. Scale bars in (A-C), 300 µm. Scale bar in (D), 100 µm.

**Figure S2. Determination of the GCV clearance rate from the eye by a reversed-phase HPLC method.** (A-D) Chromatograms resulting from the analysis of samples extracted from eyes injected with either 1 µl of PBS (A) or 1µl of 50µg/µl GCV after 0 hour (B), 1 hour (C) or 2 hours (D), respectively. Green boxes indicate the GCV signal. (E) Relative GCV levels retained in the eye after intravitreous GCV injection. The half-life of GCV in the eye is about 1.5 hours (green dashed lines). n = 3 for each group.

**Figure S3. qPCR analysis of the expression of cell-cycle related genes and pax6a/6b at 2 dpi and 3 dpi.**

(A) qPCR shows the expression levels of p27^{kip1} and p57^{kip2} at 3 dpi. (B) qPCR shows the expression levels of ccna2, ccnb1, ccnd1, ccne1, cdk1 and cdk2 at 2 dpi. (C) qPCR shows the expression of pax6a and pax6b in PBS- and GCV-treated retina at 2 and 3
dpi. #, $p > 0.05$ compared to PBS-treated control; **, $p < 0.01$ compared to PBS-treated control. $n = 3$ for each group.