

1. Depositor

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2. Strain Name

Tg(zfRH1-3.7B:EGFP)^{tkk001}

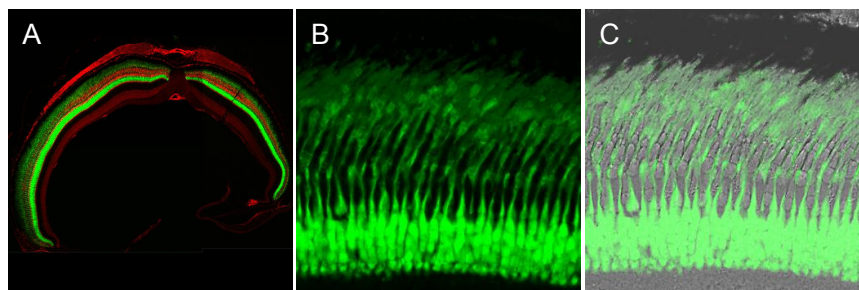
3. Reference

Wei, X., Zou, J., Takechi, M., Kawamura, S. and Li, L. (2006) Nok plays an essential role in maintaining the integrity of the outer nuclear layer in the zebrafish retina.

Experimental Eye Research 83 (1):31-44.

4. Abstract

Zebrafish have one type of rod and four types of cone photoreceptor cells in the retina. The four cone types express phylogenetically and spectrally distinct types of visual opsins. Using zebrafish as a model animal, we are exploring the molecular mechanism of the cell-type specific expression of the opsin genes. In particular, we are focusing on identifying *cis*-regulatory regions of the opsin genes. We make DNA constructs where test genomic regions in or around the opsin genes are conjugated to GFP (Green Fluorescent Protein)-related reporter genes, and introduce them to zebrafish embryos to establish transgenic lines. The Tg(zfRH1-3.7B:EGFP)^{tkk001} is one of such transgenic zebrafish lines, where the 3.7-kb region immediately upstream of the RH1 opsin (rod opsin or rhodopsin) gene is introduced with the EGFP reporter. It expresses GFP specifically in rod cells of the retina, where the endogenous RH1 opsin gene is expressed, with a spatiotemporal pattern indistinguishable from that of RH1 opsin expression. In effect, rod cells of the fish are visualized by GFP. The fish would be useful for the studies of retinal development and screening of retinal mutants, as has been shown in Wei et al. (2006).



Visualization of rod photoreceptor cells of the retina in the transgenic zebrafish, Tg(zfRH1-3.7B:EGFP)^{tkk001}, by GFP fluorescence.

(A) An overview of a frozen section of a light-adapted eye from an adult

Tg(zfRH1-3.7B:EGFP)^{tkk001} showing GFP signal (green) in rod cells and Alexa 546-phalloidin

counterstain of f-actin (red). (B) GFP-fluorescent image of the vertical section of the retina at higher magnification. The image is viewed under dark field with FITC filter. (C) Image in (B) overlaid on light-field image.