

Supplementary Data

Figure S1

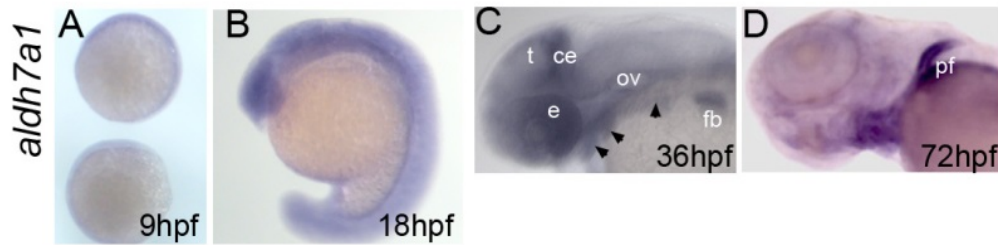


Figure S1. *aldh7a1* expression.

Whole-mount *in situ* hybridization shows expression of *aldh7a1* at (A) 9 hpf, (B) 18 hpf, (C) 36 hpf, and (D) 72 hpf. e, eye; t, tectum; ce, cerebellum; ov, otic vesicle; fb, fin bud; pf, pectoral fin. Arrow head indicates pharyngeal arches.

Figure S2

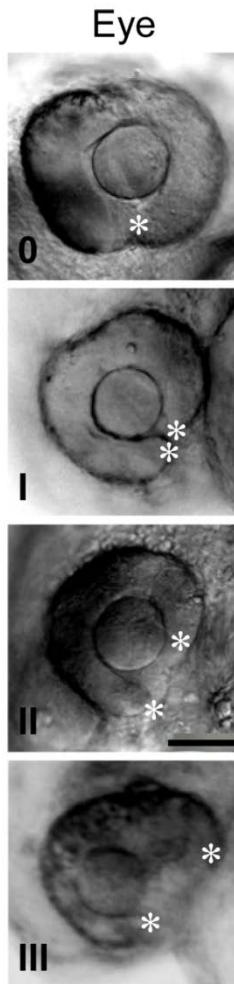


Figure S2. Grades of severity for eye development.

Classification of phenotype severity following morpholino injections. Four grades of coloboma (0, least severe; I, II, and III, most severe) classified by distance between edges of optic fissure at ~28 hpf, marked by white asterisks. Scale bar: 65 μ m

Figure S3

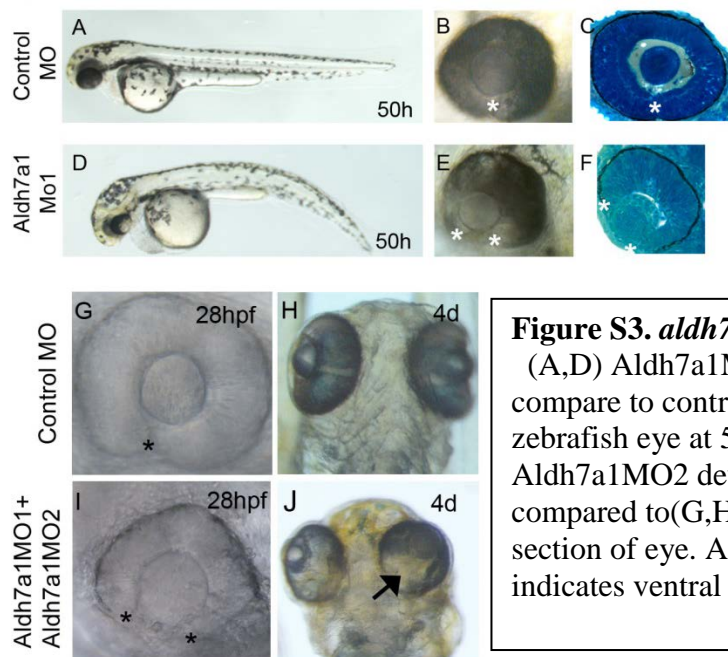


Figure S3. *aldh7a1* loss-of-function phenotype.

(A,D) Aldh7a1MO1 injected embryos developed bent tail compare to control MO injected embryos. (A-F) Lateral view of zebrafish eye at 50 hpf. Co-injection of Aldh7a1MO1 and Aldh7a1MO2 developed coloboma(I n=36/41, J n=25/31), compared to(G,H) control MO injected embryos.(C-F) Sagittal section of eye. Asterisks indicate edges of optic fissure, arrow indicates ventral defect in the eye at 4d.

Figure S4

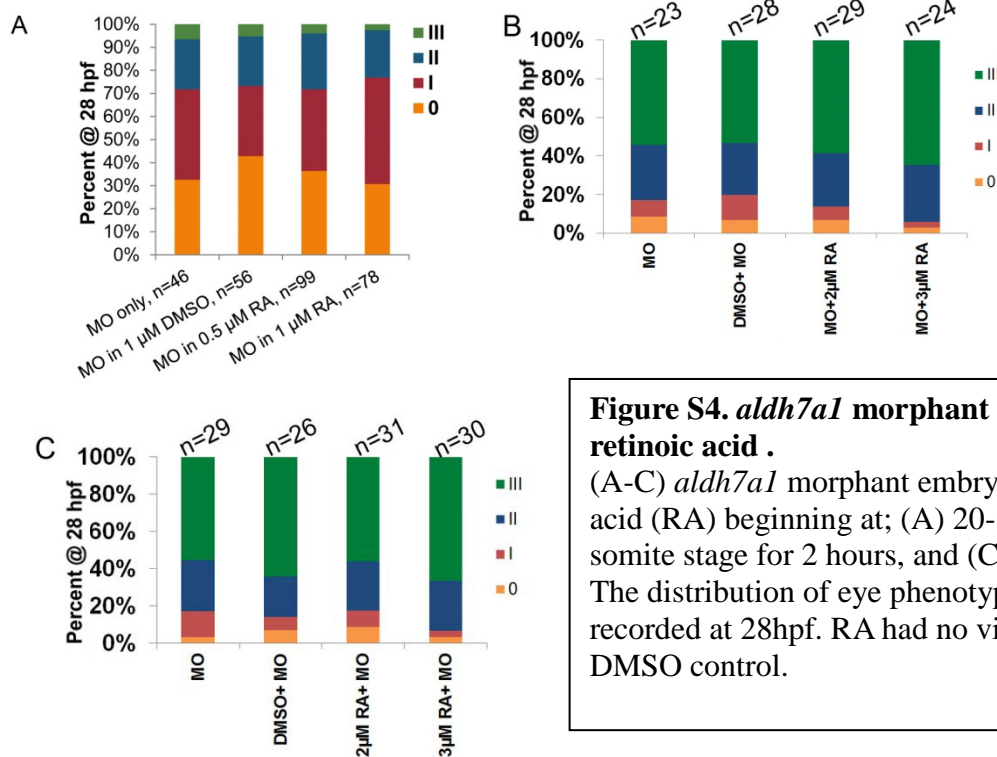


Figure S4. *aldh7a1* morphant phenotype is not rescued by retinoic acid .

(A-C) *aldh7a1* morphant embryos were incubated in retinoic acid (RA) beginning at; (A) 20-somite stage for 1 hour, (B) 2 - somite stage for 2 hours, and (C) 10-somite stage for 2 hours. The distribution of eye phenotypes (0, I, II, and III) was recorded at 28hpf. RA had no visible effect compared to DMSO control.

Figure S5

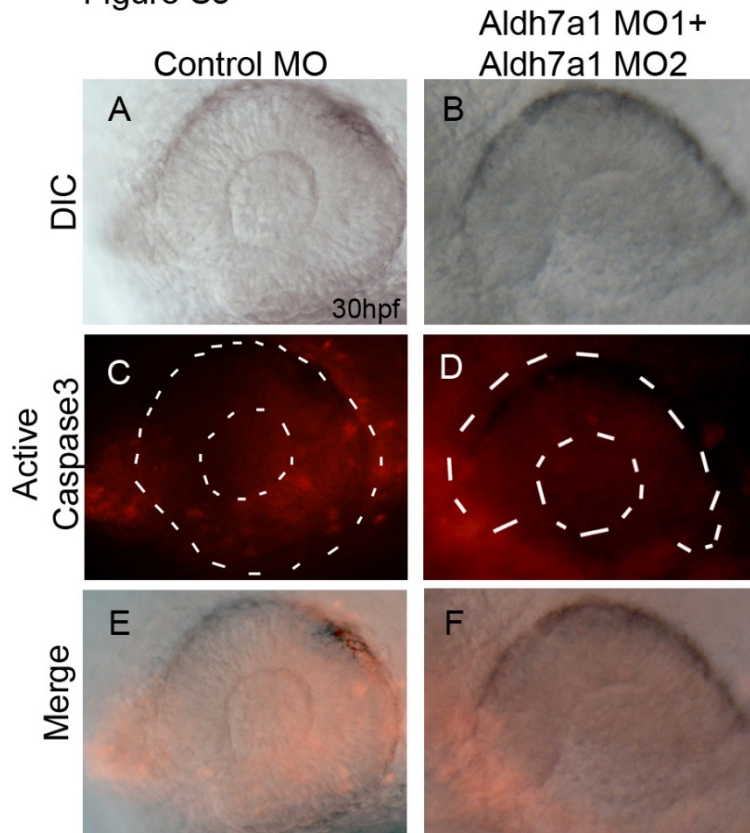


Figure S5. Coloboma in *aldh7a1* morphant fish is not due to apoptosis.

Active Caspase3 staining of control (C,E) and *aldh7a1* morphants embryos (D,F). White lines in C, D demarcates the eye.

Table S1:

Gene	cDNA IMAGE clone*	Primer [†]	5'→3' Sequence
aldh7a1	2600757	antisenseprobe_FWD	TGGTTGTACCGTCTGCTGTC
		antisenseprobe_REV	CAAAACAAGGGTTGCAATGA
		ORF_FWD	CGGAATTCCGATGTGCGACTCTGCTTATTAACCAAC
		ORF_REV	CCCTCGAGGGGGCAACATCATGATTCATTCAA
nlz1	7405421	ORF_FWD	GATCCAGATGAGCGAACTGC
		ORF_REV	TAATCACTGGTACCCAAGAGCA
vax2	9038293	ORF_FWD	ATGTTTGATCAAGCCACGA
		ORF_REV	GGTAGAGGGGAGAAGATTACAGG

*IMAGE clones obtained from OpenBiosystems (www.openbiosystems.com); [†]primers obtained from BioServe (www.bioserve.com).

Table S1

List of Image clones and Oligonucleotides used in this study.