# Supplementary information

## Retinoic Acid and Meiosis Induction in Adult versus Embryonic Gonads of Medaka

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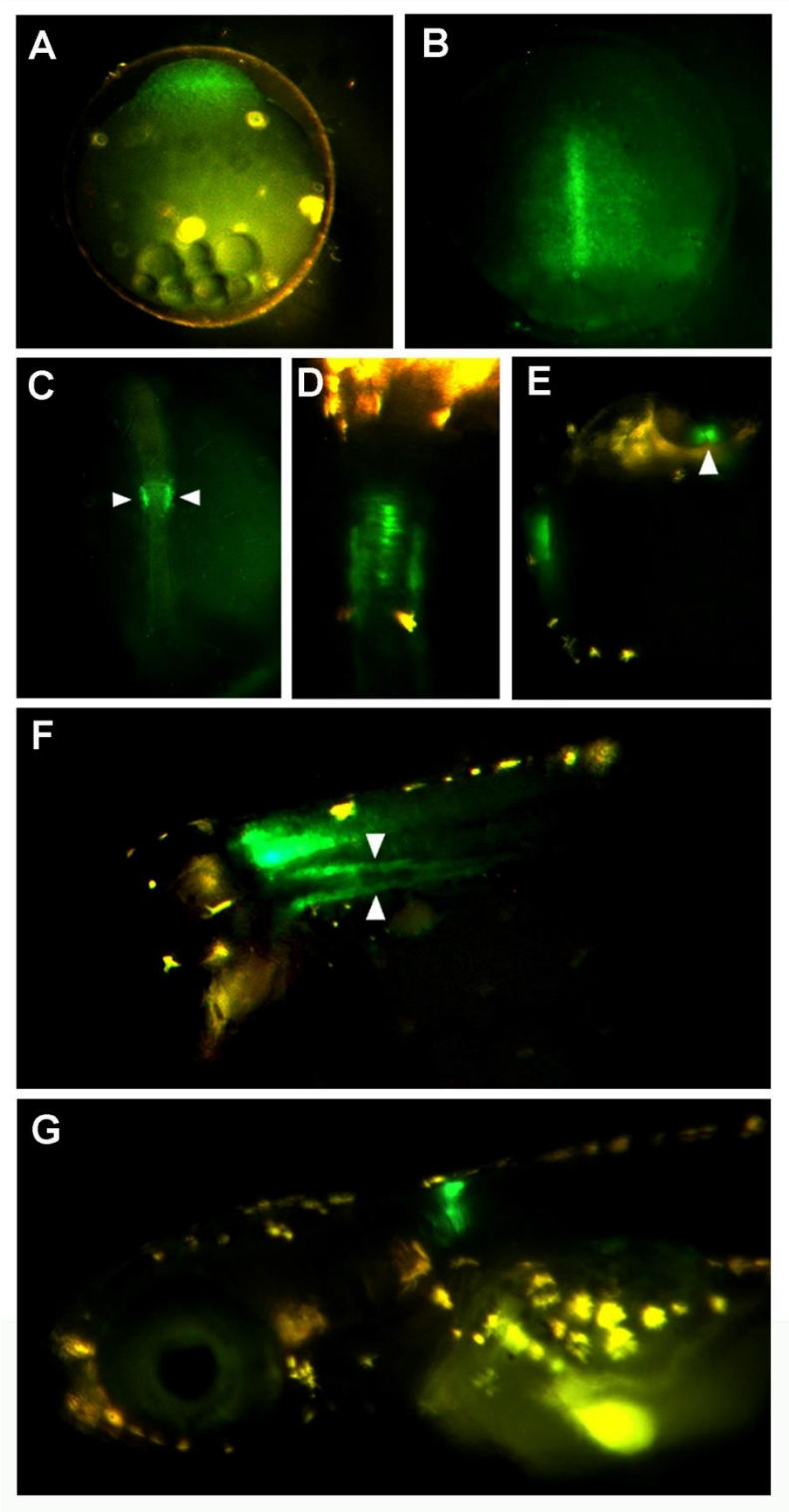
## SUPPLEMENTARY TABLE

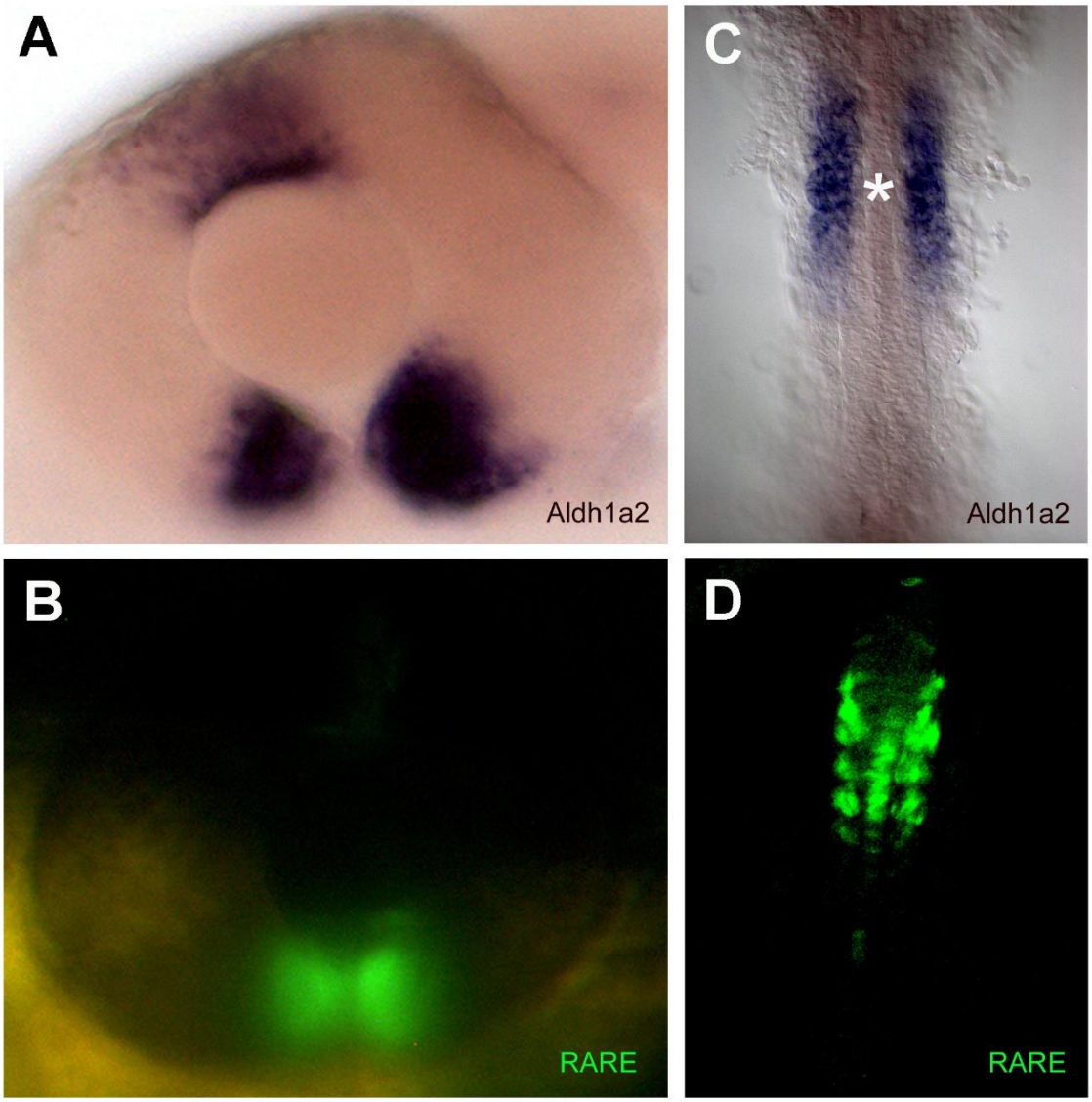
| *Primer* | Sequence | Purpose |
|---|---|---|
| Aldh1a2_RT_F | 5'-GCCTTCTCTTTGGGCTCAGT-3' | qRT-PCR |
| Aldh1a2_RT_R | 5'-GGAAATGCGGTGTAGTGGTC-3' | qRT-PCR |
| Cyp26a1_RT_F | 5'-AGAGATGAAGCGGCTGATGT-3' | qRT-PCR |
| Cyp26a1_RT_R | 5'-TCTTCTTGCTGCTGTCGATG-3' | qRT-PCR |
| Cyp26b1_RT_F | 5'-ATCCGAGCACGAGACATCTT-3' | qRT-PCR |
| Cyp26b1_RT_R | 5'-GGATGTTGGAGGAGTTGCAT-3' | qRT-PCR |
| Cyp26c1_RT_F | 5'-CAGAGGGGCTTGACTTTGAC-3' | qRT-PCR |
| Cyp26c1_RT_R | 5'-CAGCCTTTGGGAATCTGGTA-3' | qRT-PCR |
| Dmc1-RT-F | 5'-GTTTCCAGACGGCCTTTGAG-3' | qRT-PCR |
| Dmc1-RT-R | 5'-CGATGTCTCTCAGCCTGTCT-3' | qRT-PCR |
| Ef1a-RT-F | 5'-GCCCCTGGACACAGAGACTTCATCA-3' | qRT-PCR |
| Ef1a-RT-R | 5'-AAGGGGGCTCGGTGGAGTCCAT-3' | qRT-PCR |
| Aldh1a2_Probe_F | 5'-CAGAGTGGAATCCAGGAAGG-3' | *in situ* hybridization probe |
| Aldh1a2_Probe_R | 5'-GGAAATGCGGTGTAGTGGTC-3' | *in situ* hybridization probe |
| Cyp26a1_Probe_F | 5'- CTTTCAGCTCAATGGCTTCC -3' | *in situ* hybridization probe |
| Cyp26a1_Probe_R | 5'-CAAACGTCATGAGCAGCCTA-3' | *in situ* hybridization probe |

**Supplementary Table 1 –Sequence of primers used in the present study**

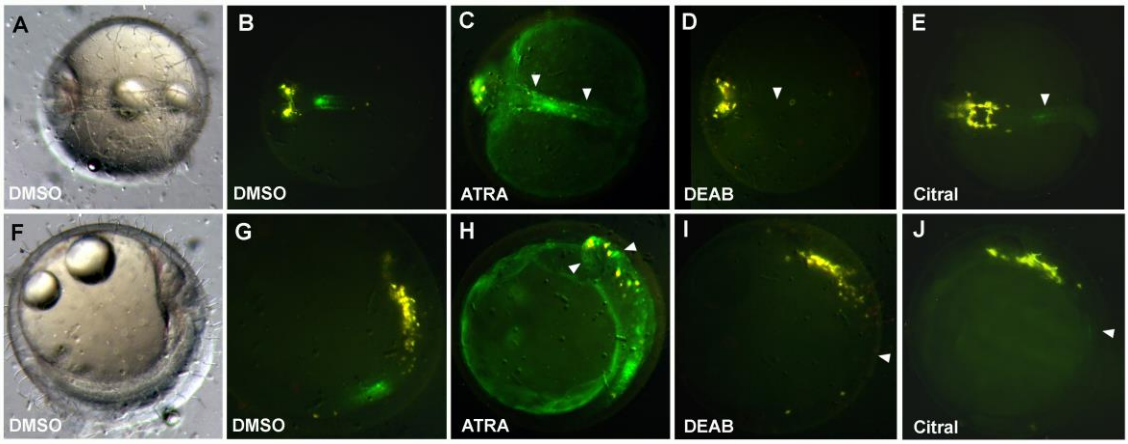
## SUPPLEMENTARY FIGURES




**Supplementary Figure 1. Spatial and temporal expression patterns of 12X Retinoc Acid Responsive Element (RARE) transgenic line during medaka development.** (A) Early blastula stage with ubiquitous RA-resposiveness. (B) Late gastrula stage with ubiquitous responsiveness on the embryonic shild. (C) Stage 18 with responsiveness on the lateral plate mesoderm (arrow head). (D) Stage 23 (12 somite stage) responsiveness in the somites (until 5-6), neural tube and notochord. (E) Stage 27 showing responsiveness in the retina, strongly at the ventral part (arrow head). (F) Stage 33 with pronephros responsiveness clearly recognizable (arrow heads). (G) Hatching stage, with responsiveness of the hindbrain being more prominent compared to other tissues.




**Supplementary Figure 2. Comparison between *aldh1a2* expression and responsiveness to retinoic acid in medaka embryo.** (A) *in situ* hybridization for *alh1a2* with ventral and dorsal expression domains in the retina. (B) RA responsiveness in the ventral retina. (C) *in situ* hybridization for *alh1a2* showing expression in the first four somites. (D) GFP expression in the first four somites and the neural tube of a *tg(12xRARE:GFP)* embryo. The asterisk indicates the region where RA action is not restricted to its source of synthesis.




**Supplementary Figure 3. 12XRARE transgenic signal after ATRA, DEAB and Citral.** Treatment of embryos with 100 nM ATRA (C and H) starting at stage 14 induces transgene expression throughout the neural tube and neural retina by stage 23 (arrow head) compared to the DMSO-treated control (A, B, F and G). Treatment of embryos with 5 µM DEAB (D and I) and 1 µM Citral (E and J), both RA synthase inhibitors, at the same stage significantly reduces transgene signal in the neural tube (arrow head) compared to DMSO-treated control.


**Supplementary Figure 4. Sequence of medaka promotor region of *cyp26a1*.** RA responsive elements (RARE) in the *cyp26a1* medaka promoter region. Those elements are conserved in the promoter of this gene in different species. Promoters sequences were retrived from GenBank (http://www.ncbi.nlm.nih.gov). Scheme adapted from ref.[32].