

Supplementary Information

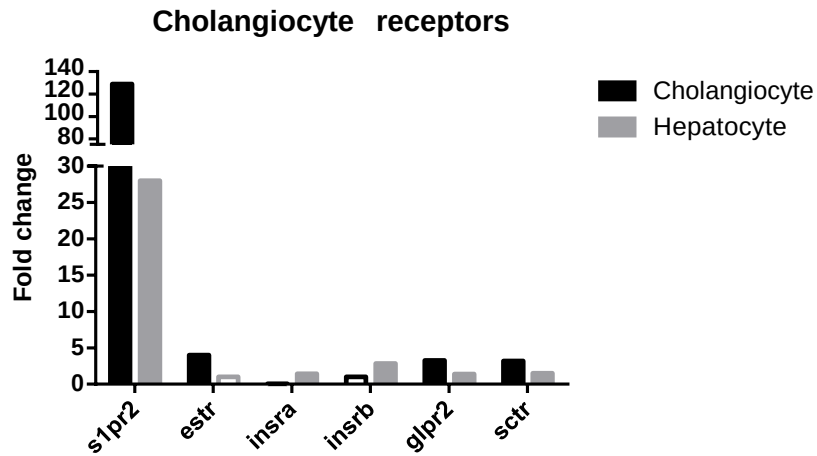
Stimulation of hepatocarcinogenesis by activated cholangiocytes upon induction of oncogenic *kras* expression in transgenic zebrafish

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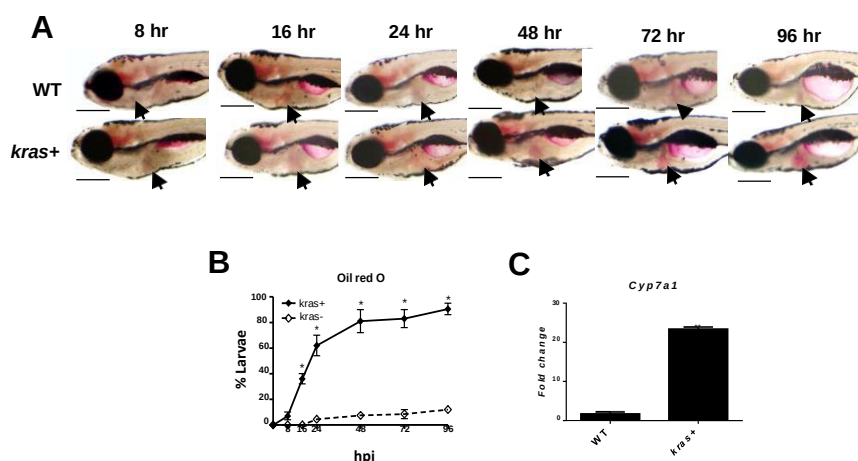
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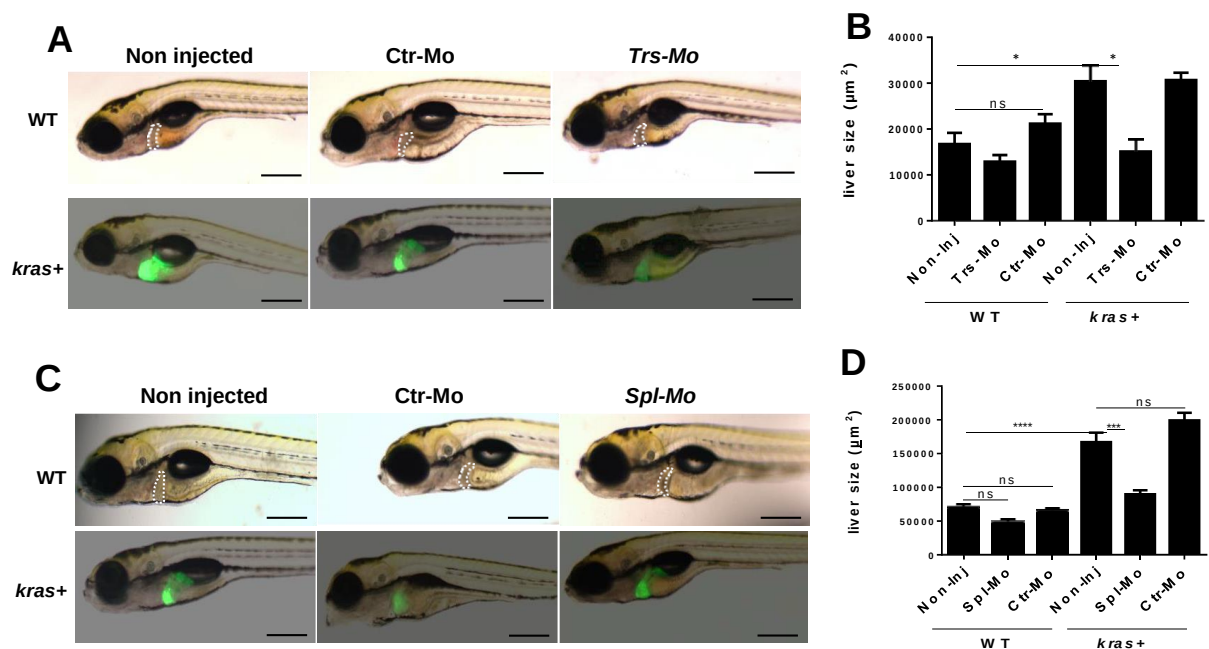
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Supplementary Fig. S1. Expression of various cholangiocyte receptor mRNAs in zebrafish hepatocytes and cholangiocytes. Hepatocytes and cholangiocytes were isolated by FACS based on GFP and RFP expression, respectively, from adult *fabp10*⁺ and *kras*⁺ transgenic zebrafish, and mRNA expression was determined by RT-qPCR. All values were normalized to *kras*⁻ counterparts and expressed as fold change.



Supplementary Figure S2. Triglyceride accumulation during liver tumorigenesis. 3-dpf *kras*⁺ and WT zebrafish larvae were treated with 20 μ g/mL Dox till 12 dpf. Samples were collected, fixed in 4% paraformaldehyde and used for Oil red O staining. (A) Representative images of Oil red O staining of *kras*⁺ and WT larvae at different time points as indicated. Arrow points to lipid staining in the liver. (B) Quantification of Oil red O in *kras*⁺ and WT larvae. Accumulation of triglycerides becomes obvious and significant starting from 8 hours post-induction by Dox in the *kras*⁺ group. (C) Comparison of levels of *cyp7a1* mRNA expression in hepatocytes of WT and *kras*⁺ adult zebrafish following Dox induction. Scale bars: 200 μ m.



Supplementary Figure S3. Effect of morpholino knockdown of *il17a/f1* on liver size. Zebrafish embryos at one-cell stage were injected with *Trs-Mo* or *Spl-Mo* and liver size was examined at 6 dpf. Ctr-MO injected and non-injected embryos were used as controls. (A) Representative images of liver size after *il17a/f1* morpholino knockdown by translational-morpholino (*Trs-Mo*). Control morpholino (Ctr-Mo) and uninjected siblings of *kras+* and WT zebrafish larvae were included for comparison. Livers were recognized by GFP fluorescence in *kras+* larvae and outlined in WT larvae. (B) 2D liver size quantification in different groups. (C) Representative images of liver size after *il17a/f1* morpholino knockdown (*Spl-Mo*). (D) liver size quantification in different groups. N $\geq$ 15 each group. Scale bars, 50 μm . Statistical significance: *P<0.05.