

Title: Supplementary Video 1.

Description: Acoustofluidic rotational manipulation and imaging of a 5 dpf zebrafish.

Title: Supplementary Video 2.

Description: The rotation speed of a 5 dpf zebrafish under 5 different input voltages.

Title: Supplementary Video 3.

Description: The microscopic images and 3D reconstruction model projections of a *Tg(fabp10:DsRed; els3l: GFP)^{gz12}* 5 dpf zebrafish larva over one rotation cycle, including images of merged fields and exploded fields (bright field, DsRed, GFP).

Title: Supplementary Video 4.

Description: Acoustofluidic rotational manipulation and imaging of three typical acute ethanol (EtOH) exposed zebrafish with morphological deformation.

Title: Supplementary Video 5.

Description: Continuous imaging of acute ethanol (EtOH) exposed zebrafish liver.

Title: Supplementary Video 6.

Description: Projections of zebrafish liver models in **Fig. 6c** from multiple angles.

Title: Supplementary Video 7.

Description: Rotational motion of a zebrafish yolk within an intact chorion (0 dpf, prior to tail extension).