

SUPPLEMENTARY INFORMATION

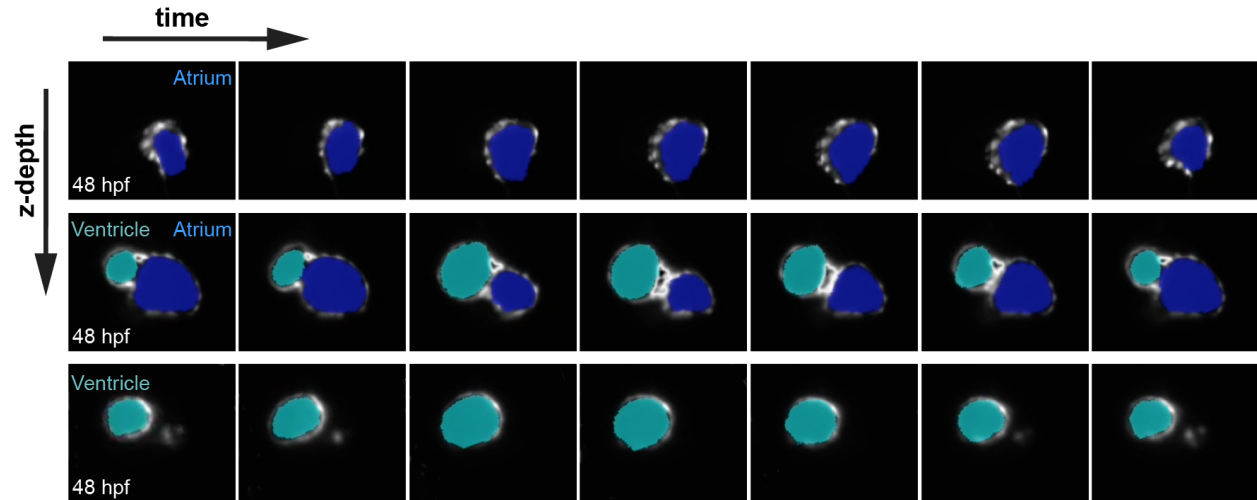


Figure S1: CFIN chamber classifications at distinct z-depths.

CFIN-generated chamber labels over a single cardiac cycle at three representative z-depths displaying only atrium, atrium and ventricle, or only ventricle.

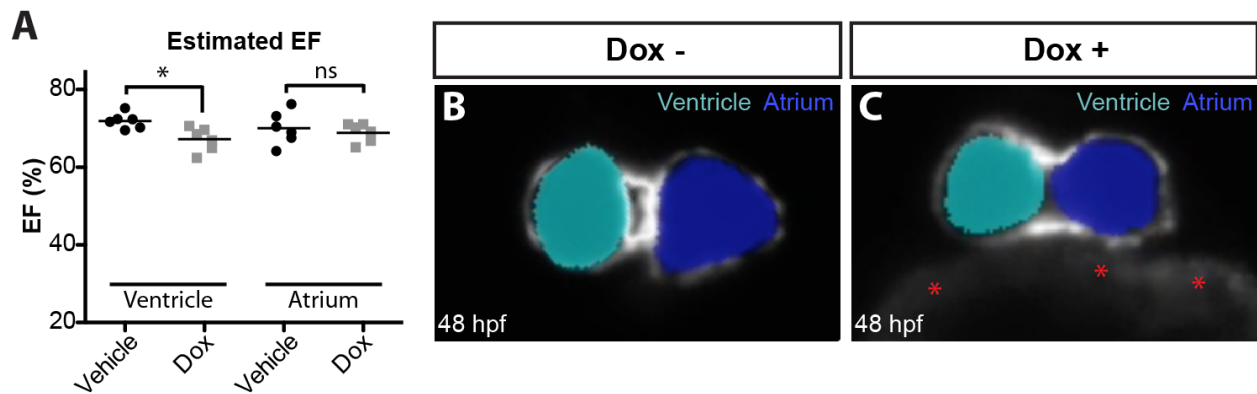


Figure S2: Estimated EF and Dox-induced autofluorescence.

(A) Estimated ejection fraction values of Dox treated embryos and controls using chamber radius measurements and the assumption of spherical chambers. (B-C) CFIN labels in untreated embryos (B) compared with Dox treated (C) in the presence of Dox autofluorescence in the yolk (red asterisks).

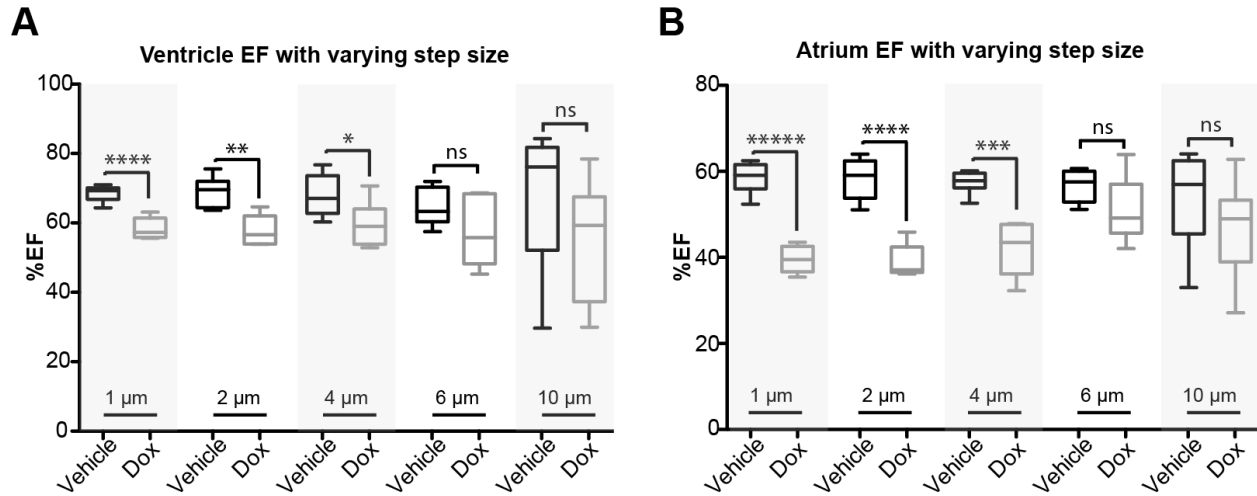
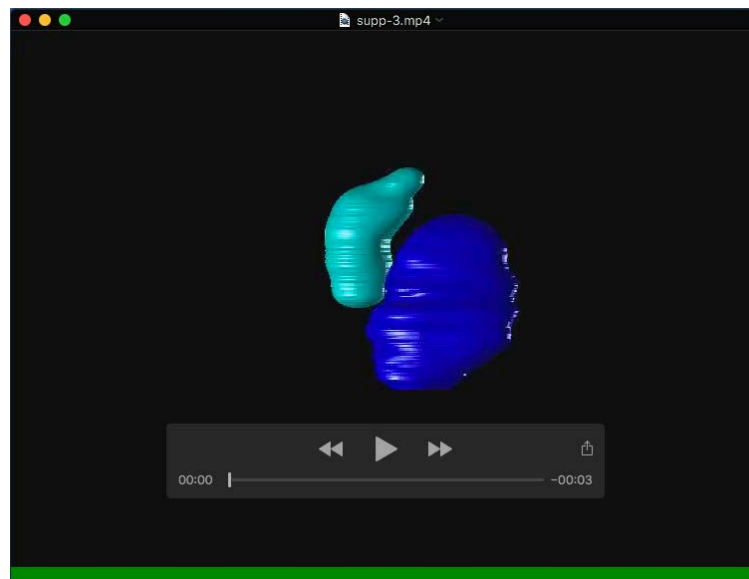


Figure S3: The effects of increased step size on volume resolution. (A-B) Ventricular (A) and Atrial (B) EF measurements produced by CFIN using input datasets with increasing z-depth step sizes. Significance denoted as ***** $p < 10^{-5}$, **** $p < 10^{-4}$, *** $p < 10^{-3}$, ** $p < 10^{-2}$, * $p < 0.01$, or ns (not significant $p > 0.05$) as determined by the students two tailed t-test.



Movie 1: CFIN validation at a single z-depth

Dynamic image from a single z-depth with CFIN chamber annotations overlaid.



Movie 2: Volumetric 4D reconstruction from CFIN analysis

4D graphical reconstruction generated with a synchronized dataset analyzed by CFIN.

CFIN_final.mat

This file contains the trained network for image segmentation of embryonic zebrafish hearts.
(To be opened in MATLAB.)

CFIN_Code.m

This file contains the MATLAB code for volumetric analysis of segmented images.