

Description of Additional Supplementary Files

File name: Supplementary Movie 1

Description: Anterior-posterior view of a zebrafish embryo (Tg(h2afva:h2afva-mCherry),48hpf) imaged with 24 different equally spaced angles with an mSPIM. Images are maximum intensity projections along the y axis.

File name: Supplementary Movie 2

Description: Image response curve of different angular region. Scatter plot is the estimated number of foreground blocks and connected curve is the fitted von Mises distribution curve.

File name: Supplementary Movie 3

Description: Evolution of ridge plot of the imaging angular imaging response of a zebrafish embryo (Tg(kdrl:GFP), 48 hpf) over a 16 hour imaging experiment.

File name: Supplementary Movie 4

Description: Top panel: comparison of 3-view fused image data acquired with blind multi-view and the smart rotation workflow. Scale bar represents 150 μm .

Mid panel: Relative difference in information content between the two approaches.

Bottom panel: Cumulative information content gain over the entire volume by using the smart rotation workflow over the blind approach. Green segments represent information gain, red segments represent information loss.