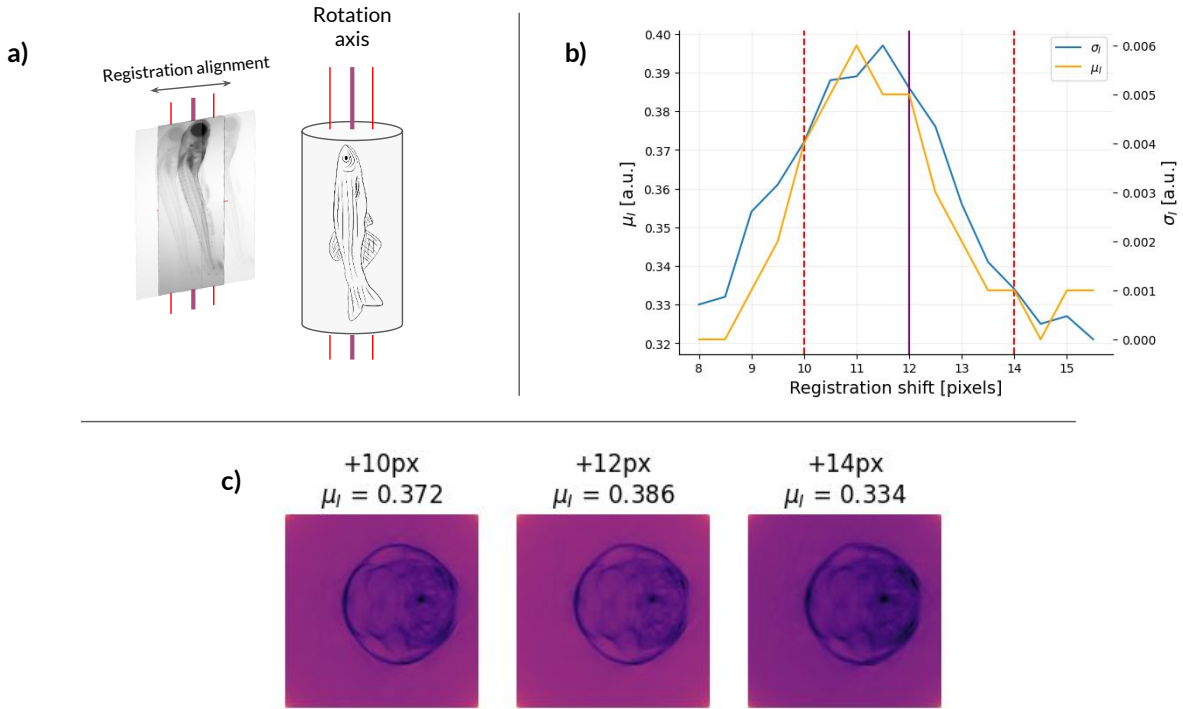


## Supplementary material

### Artifacts due to alignment algorithm

The reconstruction of individual 2D slices requires an additional preprocessing step to align the rotation axis of the OPT sample container with respect to the center of the detector. Following the method described in<sup>1</sup> for artifact correction, the most suitable registration shift in the projections (sinograms) space was identified by selecting the reconstructed image with the largest intensity deviation  $\sigma_I$ . As shown in Fig. S1, a small variation of the shift with respect to the peak produces a strong decrease in the image mean intensity  $\mu_I$  (yellow line), which in turn results in different gains in the mean intensity of the reconstructed images. We can notice that both peaks does not necessarily coincide for the optimal shift.



**Figure S1. Effect of alignment algorithm.** a) The registration algorithm applies shifts in the sinogram space in order to maximize the standard deviation of intensity  $\sigma_I$  (blue line) in the image space. b) A small misalignment correlates with a strong blurring effect on the final reconstructions, as shown in c) and a decrease of the mean intensity of the image  $\mu_I$  (yellow line). Since in most cases these peaks does not often coincide, abrupt changes of illumination appear along the z-axis of the reconstructed volume.

### References

1. Walls, J. R., Sled, J. G., Sharpe, J. & Henkelman, R. M. Correction of artefacts in optical projection tomography. *Phys. Medicine & Biol.* **50**, 4645 (2005).