

## Description of Additional Supplementary Files:

**Supplementary Movie 1:** Complete 3D reconstruction of the zebrafish atrium at 124 hpf. CM membranes shown in cyan (myl7:EGFP-Hsa.HRAS) and CM nuclei in yellow (myl7:H2B-mScarlet); grey spheres indicate the nuclei of all the atrial CMs; cross-section through the atrium shows an example of an elongating atrial CM segmented in 3D with a magenta surface.

**Supplementary Movie 2:** Atrial muscle structures at 14 dpf. 360° view of the heart shown in Fig. 3 and its 3D segmentations. CM membranes shown in white and cyan (myl7:EGFP-Hsa.HRAS) and CM nuclei in yellow (myl7:H2B-mScarlet); cyan marks the inner layer atrial CMs.