3D X-Ray Microscopy using Synchrotron Radiation

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artistic view: GINIX II @ PETRA IV, proposed







- Rat face photograph showing characteristic mystacial vibrissae. а
- Schematic of X-ray phase contrast imaging / GINIX parallel beam setup (voxel size of 650 nm). b
- 3D rendering of the obtained C2 follicle dataset.
- Virtual 2D section through the follicle shows detailed anatomical structures; d Inset shows myelinated axons of the deep **vibrissal nerve** at high magnification.
- 3D rendering of densely reconstructed follicle anatomy. е
- High magnification 3D rendering of 174 myelinated and ≥58 unmyelinated nerve axons.

B. Gerhardt et al.: 3D architecture and linearized mapping of vibrissa follicle afferents, Nature Communications 16 (2025)

Visualisation of the reconstruction of the murine heart 3d structure

- Surface rendering of the 3D reconstruction. а
- b,c The orientation of the myofibers derived from the structure tensor, visualised as 3D streamlines based on the 3D vector field of the structural orientation obtained by the structure tensor.

The streamlines were generated by 5000 seedpoints in (b) and 1000 seedpoints in (c), respectively. Seedpoints were placed randomly in the volume.

J. Frohn et al.: 3D structure of entire hydrated murine hearts at histological resolution, Scientific Reports 15 (2025)



