NC STATE UNIVERSITY

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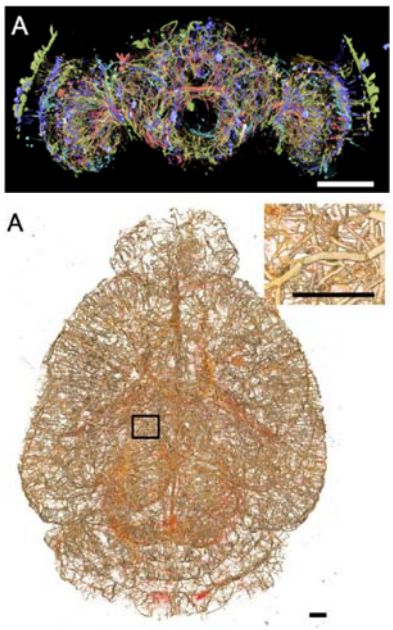
Mapping whole-body neural networks with synchrotron X-ray at single-cell resolution



Friday
March 10, 2017
noon

3503 Thomas Hall (Stephens Room)
Refreshments at 11:45 AM

Mapping comprehensive neural networks in the brain and the body is a formidable but essential undertaking to learn how nervous systems control complex behaviors. Dr. Chiang developed an effective approach using integrated synchrotron X-ray tomography techniques for fast 3D imaging of a large population of metal-labeled individual neurons in *Drosophila* and mice, without tissue clearing or physical sectioning. The integration of phase contrast, absorption contrast and high isotropic resolution allows the 3D reconstruction of thousands of single neurons together with muscles and skeleton within a large volume. The morphology of single neurons identified by X-rays is validated with the comparable confocal images of fluorescence-labeled neurons. With *in situ* imaging and fast data acquisition this new approach provides a visual representation of the interior of a body at single-cell resolution, suitable for mapping neural networks in the whole animals within a realistic time frame.

More information: http://brc.life.nthu.edu.tw/FlyLab/; http://www.flycircuit.tw/

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