

Automated large-volume confocal imaging system

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Confocal microscopy is a mature and commercially available system to acquire sub-micron fluorescence biological images. However, the field of view of a high N.A. objective lens is still limited to tens μm by tens μm and the penetration depth is also limited by scattering effects in turbid tissue. In order to build a whole *Drosophila* neuron circuit database, we integrated tissue clearing, vibratome, stepper, and confocal imaging techniques together to build up an automated large volume confocal imaging system, and have successfully acquire a whole *Drosophila* sample 3D image which is 3 mm \times 2 mm \times 1 mm in size automatically by this system, demonstrated a preliminary representative *Drosophila* model based on this image.