

## SCANLESS TWO PHOTON IMAGING OF C. ELEGANS

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The past two decades saw the emergence of two photon laser-scanning microscopy as a powerful imaging tool for thick tissue imaging. Owing to its inherent optical sectioning capability, deep penetration of the excitation light in tissues, and its capability to excite multiple fluorophores, two photon laser-scanning microscopy has been used in a wide range of imaging applications. The minor drawback, however, of this imaging technique is its relatively slow image acquisition rate. In this study, we demonstrate a novel and simple scanless two photon imaging technique based on the generation of an illumination plane. We applied this novel technique to depth-resolved imaging of cameleon-expressing pharyngeal muscle of *C. Elegans*. This technique offers high acquisition rates, minimal photodamage, and deep penetration of excitation light into thick tissues allowing long-term dynamic imaging of wide range of biological samples from embryos to adult worms.

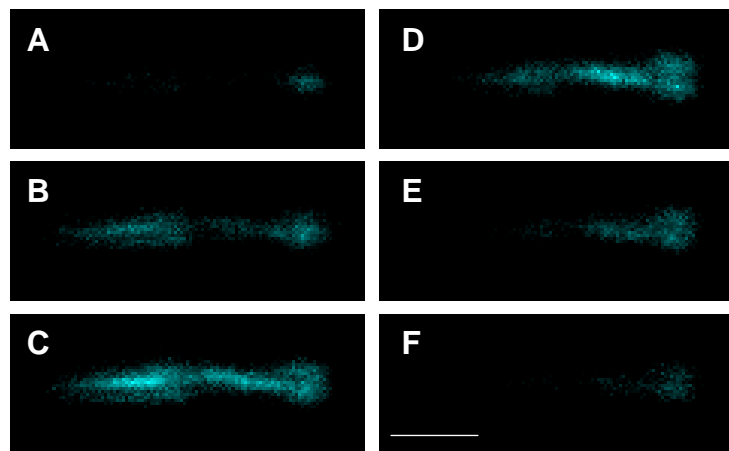


Figure 1: Fluorescence optical sections of cameleon in *C. elegans* pharyngeal muscle at 8  $\mu\text{m}$  depth intervals clearly depicting the optical sectioning capability of two photon imaging based on plane illumination. Scale bar: 50  $\mu\text{m}$ .