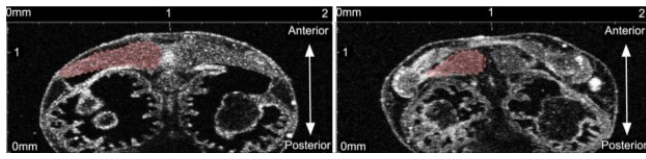


APPLICATION



Xenopus Coronal Plane: Ceratohyal Cartilage^{1,*}

Animal models are studied to understand biological phenomena and transfer the findings to human biology and medicine.

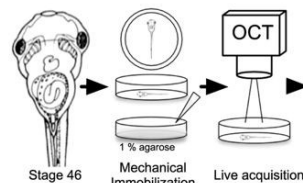
The non-invasive nature of OCT has made it an indispensable tool that allows researchers to image animal models *in-vivo* over the course of the animal's life into adulthood.

QUICK FACTS

- ◆ Animal models can be imaged *in-vivo* and at various stages in their lives.
- ◆ Long wavelengths such as 1300 nm penetrate deep into tissue.
- ◆ Shorter wavelengths such as 880 nm allow high-resolution imaging.
- ◆ The penetration depth may vary depending on the tissue type.
- ◆ M-modes (depth scans vs. time) highlight changes at a specific lateral position.

TYPICAL SETUP

For *in-vivo* imaging, zebrafish and xenopus are typically anesthetized and then immobilized, e.g. in agarose. OCT experiments can then be performed from different angles.^{1,4}

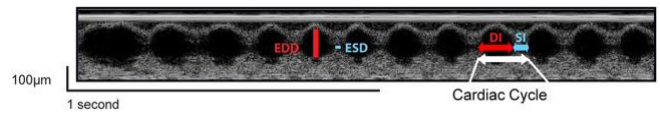


Protocol for xenopus immobilization and imaging.^{1,*}

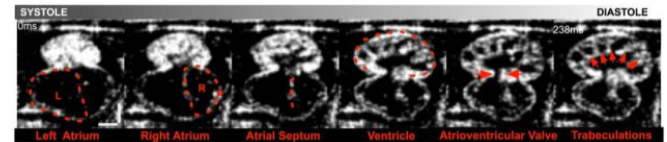
After anesthetization, drosophila flies can be fixed using adhesive. OCT imaging can be performed after the flies wake up.²

To image chicken embryos, a window is cut into the eggshell and the vitelline membrane is peeled away. Inserting a glass window preserves the embryo and allows long-term measurements.⁵

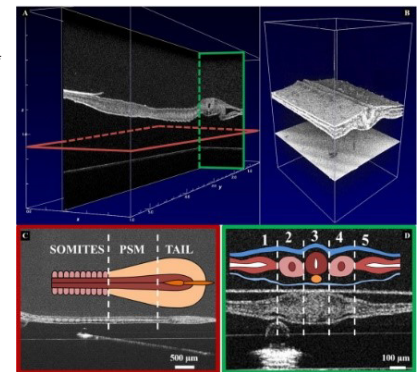
EXAMPLE IMAGES



M-scan of drosophila heartbeat. Highlighted regions show the end diastolic diameter (EDD), end systolic diameter (ESD), diastolic interval (DI), and systolic interval (SI).^{2,*}



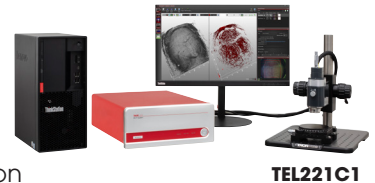
Top: Ventral Three Chamber View during Xenopus Cardiac Cycle^{1,*}
Right: Morphology of Chicken Embryo (3D View and Sagittal as Well as Transverse Cross Sections)^{3,*}



RECOMMENDED ITEMS

Choice of OCT System:

- ◆ **TEL221C1:** For Deep Penetration
- ◆ **GAN332C1:** For High Axial & Lateral Resolution
- ◆ **GAN632C1:** For High Speed and High Axial & Lateral Resolution



Custom Modifications:

- ◆ Alternate Lens Kits for Higher Lateral Resolution:
 - 10X Scan Lens Kit: 4 µm at 900 nm and 6 µm at 1300 nm
 - 20X Scan Lens Kit: 2 µm at 900 nm and 3 µm at 1300 nm
- ◆ Higher Lateral Resolution Lenses Available on Request

Interested? Email OCT@thorlabs.com for more information.

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