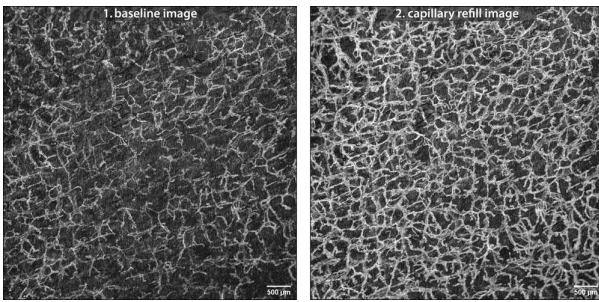


## APPLICATION



Images of Capillaries in the Dermis <sup>5,\*</sup>

OCT Angiography uses backscattered light from blood cells to highlight blood vessels from the surrounding tissue; no dyes are needed.

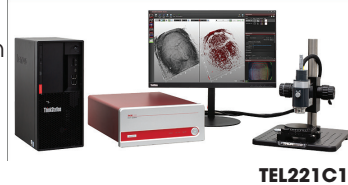
## QUICK FACTS

- ◆ OCT Angiography highlights blood vessels through changes in the OCT signal caused by moving blood cells.
- ◆ No dyes are necessary.
- ◆ OCT Angiography must be performed *in vivo*.
- ◆ The Speckle Variance Angiography Mode is included in the complementary ThorImage OCT software package.
- ◆ Functionalized additives such as gold nanorods can be used to enhance the signal strength.<sup>3</sup>
- ◆ Typical imaging depths are 1 mm through skin tissue and 1.5 to 2 mm through brain tissue.

## RECOMMENDED ITEMS

### Choice of OCT System:

- ◆ **TEL221C1:** High-Resolution
- ◆ **VEG210C1:** High Penetration Depth

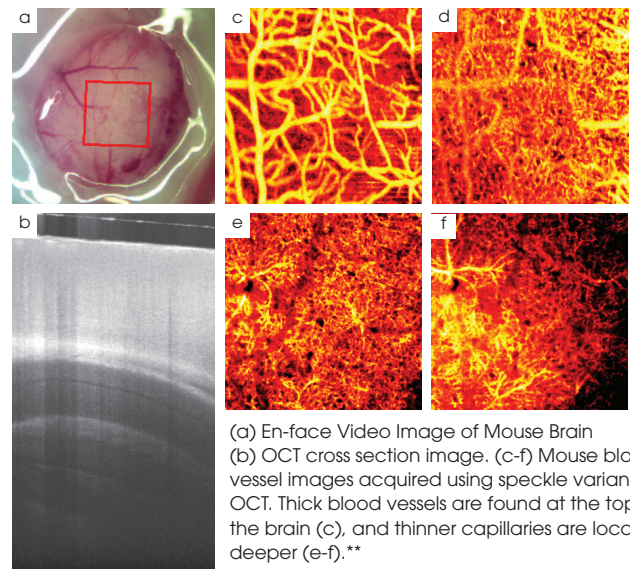


TEL221C1

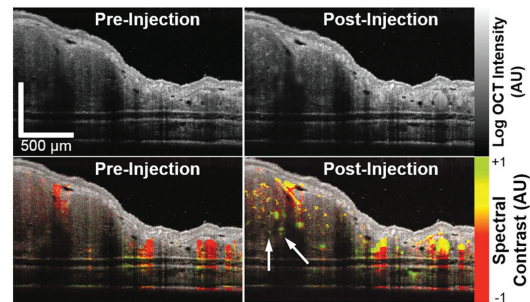
### Useful Accessories:

- ◆ Different Objectives for Different Purposes:
  - High-Resolution Objective **OCT-LK2** for Small Capillary Imaging
  - Long-Focus Objective **OCT-LK4** for Large Depth of Focus (Deep Imaging)
- ◆ Immersion Spacers to Stabilize Scan Head and Provide Flat Surface
  - **OCT-IMM3** for OCT-LK3 Lens Kit
  - **OCT-IMM4** for OCT-LK4 Lens Kit

## EXAMPLE IMAGES



(a) En-face Video Image of Mouse Brain  
(b) OCT cross section image. (c-f) Mouse blood vessel images acquired using speckle variance OCT. Thick blood vessels are found at the top of the brain (c), and thinner capillaries are located deeper (e-f).<sup>\*\*</sup>



OCT images (top row) and angiography images (bottom row) of a mouse ear with a tumor before and after injection with gold nanorods. The nanorods are functionalized so they bind to the tumor in the left part of the image. A clear increase of signal strength can be observed in the blood vessels of the tumor (see arrows).<sup>3,\*</sup>

## TYPICAL SETUP

- ◆ A tilted glass window provides a smooth surface in order to decrease artifacts and increase signal intensity.
- ◆ For angiography in the brain, a cranial window can serve this purpose.
- ◆ For angiography in the skin, a spacer from Thorlabs can serve to fix the probe to the skin and provide a glass surface, as shown in the image on the right.<sup>5,\*</sup>

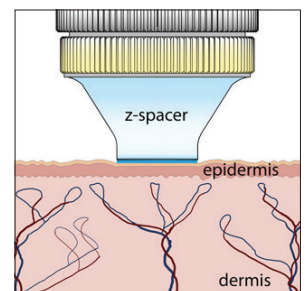


Illustration of Z-Spacer on Skin Surface

Interested? Email [OCT@thorlabs.com](mailto:OCT@thorlabs.com) for more information.

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Image adapted from Original.

\*\* Images Acquired in Collaboration with MacVicar Lab, University of British Columbia.