OCT Instrument

HH OCT Probe

Probe sterilization package

tVisio-1

HAND-HELD OCT IMAGER FOR TRANSCUTANEOUS VISUALIZATION OF TISSUE MORPHOLOGY

**The imaging instrument
enables clinicians to gather micron-scale images of the tissue using
a hand-held probe using a 20Ga needle**

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OPTICAL IMAGING INSTRUMENT FOR IMAGING TISSUE MORPHOLOGY THROUGH A NEEDLE PROBE

ADDRESSED NEED:

The immediate application of this device is to visualize the in situ tissue morphology at the micron scale through a needle type probe. Therefore, this instrument can be used in combination with ultrasound (US) or computed tomography (CT) imaging, to either aid in the diagnosis of various diseases or to guide biopsy, by visualizing tissue morphology at the tip of the biopsy needle, and thus to enable better selection of the biopsy location.

TECHNOLOGY/CAPABILITIES:

The tVisio-1 optical imaging instrument uses the benefits of Optical Coherence Tomography (OCT) to visualize tissue morphology at the micron-scale. As shown here (see figure below), OCT provides cross-sectional images with structural-level resolution in the deeper tissue layers, to depths of at least 1.8 mm. It uses a serializable hand-held probe and custom-made single use imaging needles with a diameter of 0.9 mm (20Ga). The needles have a practiced slot at their distal end, enabling the exit of the OCT light beam. An optically transparent liner is places inside the needle to prevent blood or tissue fluids entering within the imaging probe. The OCT beam is scanned axially along the needle slot by a motor-driven fiber optic probe, which is encapsulated within a hypodermic tube.

IMAGING CAPABILITIES:

- Field of view: 1.5mm x 20mm
- Imaging resolution: 8 um axial and 10 um lateral
- Imaging depth: > 1.5 mm
- Imaging speed: 1-2 fps
- Acquisition of 1 or more images (user selectable) at the press of a button
- Automated interpretation of tissue morphology (see https://www.mdpi.com/2075-4418/13/13/2276)
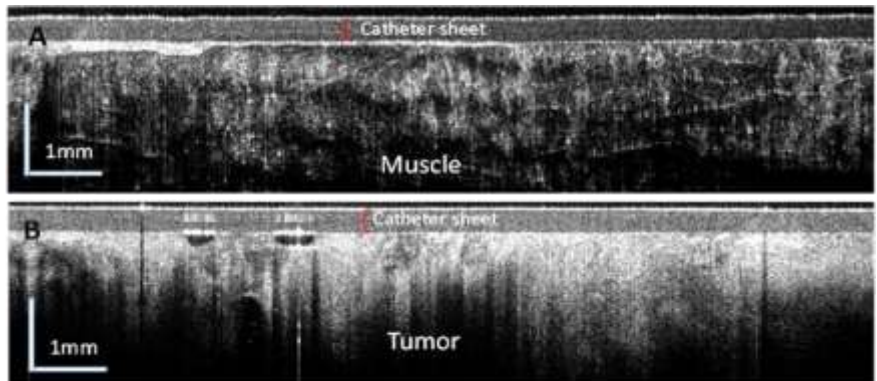
Example of OCT images collected from a rabbit model of thigh cancer

FEATURES:

- Provides user selectable scanning range: 5-20 mm

- Provides zoom-in to visualize small scale features, and place cursors to measure the size of the image features
- Optionally, the software can enable automatic

Example automated interpretation of tissue type using AI; Left- AI summary of tissue area for each tissue class; Top right: OCT reader annotated image; Bottom right: AI segmentation results

interpretation of the tissue morphology, proving that it was previously trained to interpret same organ images.

Note:

This instrument is not yet FDA approved and therefore is available for investigational use only.

LICENSING: This technology is available for licensing

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