

Skin Cancer Imaging

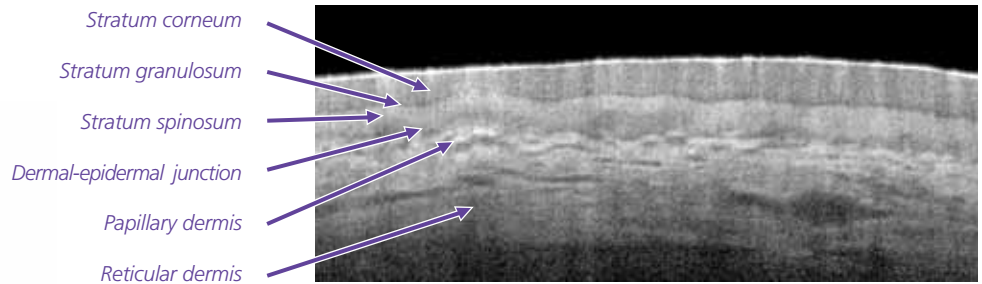
*See the tumour below the surface
in vivo and in real time*



Assists the diagnosis and treatment of non-melanoma skin cancer

VivoSight - A real breakthrough in skin cancer imaging

The VivoSight Multi-Beam Optical Coherence Tomography (OCT) system is a revolutionary laser based imaging solution which provides high resolution images of the structure of skin. It is best described as 'laser ultrasound' and provides real time, video rate tomograms up to 2 mm beneath the skin surface, with exceptional resolution. This allows the skin's structure to be visualized and the extent of cancerous lesions determined. Features such as the epidermis, the dermis and blood vessels can be imaged. 3D volume images can also be taken.



Safe

VivoSight uses a low intensity near infrared laser which is eye safe in normal use (class1). The system does not produce any harmful ionizing radiation.

Simple

VivoSight is simple and easy to use. Images are buffered and stored in the system's database and can be exported in a standard file format for post-analysis or reporting.

Fast

VivoSight provides video rate images. It is quick to set-up and images are taken in real time. Images can be reviewed immediately after acquisition.

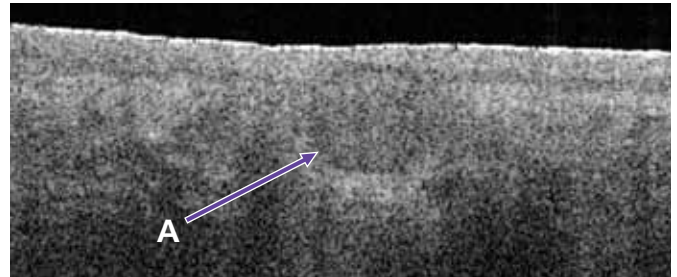


The hand-held probe has been designed specifically for clinical use. It is light and ergonomic with a wipe-clean surface. The removable 'stand-off' stabilises the unit and allows imaging of any skin area or skin type.

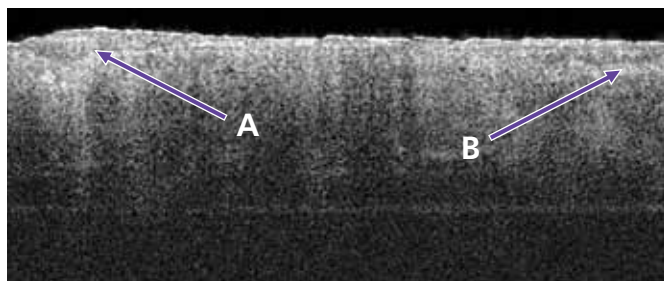
Enables Non-Invasive Treatments

Prescribe Alternative Treatments

VivoSight can be used to visualize changes in tissue structure that are characteristic of skin cancers and related conditions. A thickened stratum corneum and a disrupted basal membrane are features of early stage skin cancer that can be easily identified. Nodular basal cell carcinoma can also be seen as it grows out of the basal membrane. Better and earlier identification of these conditions assists in prescribing non-surgical treatments such as creams or PDT. VivoSight achieves this non-invasively.



OCT image showing an early stage BCC skin cancer. A single cancer nest extending from the basal membrane is clearly visible.



OCT image showing changes to tissue structure due to skin cancer. **A** - thickened stratum corneum. **B** - disrupted basal membrane.

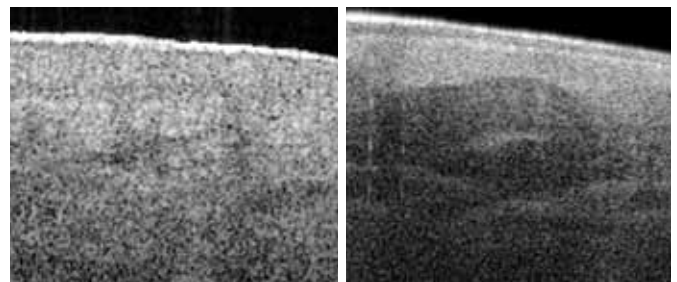
Monitor Treatment Progress

VivoSight can be used to monitor the response to non-invasive treatments enabling earlier, informed decisions to discontinue or extend the treatment. If a biopsy is required the instrument can also be used to guide the biopsy, providing confidence that the region of interest has been assessed.

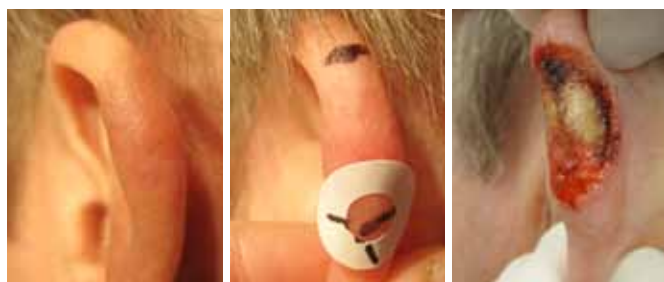
Defines Tumour Margins

Reduce Incomplete Excisions

VivoSight is a unique tool that enables the margins of BCC tumours to be located and marked. This is done quickly and non-invasively. VivoSight can image tumours outside the visually apparent lesion to aid determination of the correct margin for excision.



VivoSight images. **Left:** normal skin. **Right:** BCC lesion.



Left: A BCC lesion on an ear. **Centre:** The same lesion with top and bottom margins marked using VivoSight. **Right:** The lesion after Mohs surgery.

Use Fewer Mohs Stages

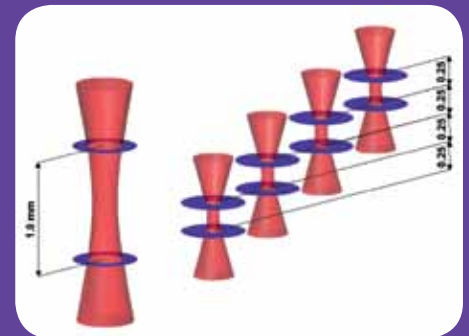
Delineating tumour margins with VivoSight prior to Mohs surgery assists the surgeon in determining initial margins. This can help reduce the number of stages in the procedure, saving significant time and cost.

Michelson Diagnostics

Experts in optical engineering and medical imaging, our team at Michelson Diagnostics is leading the way in applying Optical Coherence Tomography (OCT) to multiple healthcare applications. Our unique, patented 'Multi-Beam' OCT optics provides images with double the resolution of single-beam OCT equipment, providing higher image quality. This advantage has helped us establish our position as market leaders in high resolution surface tissue imaging.

VivoSight with Topical Probe Specification

OCT System type:	Swept-source Fourier-Domain OCT
Laser centre wavelength:	1305 +/- 15 nm
Optical resolution (in tissue):	< 7.5 µm lateral, < 10 µm axial
A-Line rate:	10 kHz
Frame rate:	> 6 fps (5 mm scan width / 1,250 A-Line) > 20 fps (1 mm scan width / 250 A-Line) > 35 fps (0.2 mm scan width / 50 A-Line)
Image formats:	TIFF, TIFF stack
Laser system classification:	Class 1
3D Image capture:	Yes
Scan area (w x l x d):	5 mm x 5 mm x 2 mm
System components	
Light source:	Santec HSL-2000-12-MDL
Processing system:	Dell Precision Quad Core Workstation
Display:	22" Flat Panel Display
Data acquisition:	Spectrum M2i4022 4-channel 20 MHz 14-bit data acquisition card



Multi-Beam OCT: Four beams provide a much tighter focus than is physically possible with a single beam with the same overall depth of focus.

Rental or Purchase?

We understand that projects may require the use of equipment for a specific period (weeks or months) and that there are often constraints with grant applications and budget limitations. We have a flexible approach to obtaining a VivoSight OCT Scanner which is available by:

Rental or Direct purchase

- 3 levels of after sales support and training
- Support packages include annual maintenance visits
- 1 year warranty
- 70% of rental payments can count towards purchase

Contact Us

To arrange a no obligation demonstration and / or quotation please contact us on +44 (0) 208 308 1695 or email demo@md-ltd.co.uk

References:

J. Holmes, S. Hattersley, N. Stone, et al. (2008) "Multichannel Fourier domain OCT system with superior lateral resolution for biomedical applications" Ed. J. A. Izatt, et al. Vol. 6847, pp. 684700. Presented at Coherence Domain Optical Methods and Optical Coherence Tomography in Biomedicine XII, SPIE.

Holmes, J. (2008) "Theory and applications of multi-beam OCT" Eds. Podoleanu, A. Vol. 7139, pp. 713908. Presented at 1st Canterbury Workshop on Optical Coherence Tomography and Adaptive Optics, SPIE, Canterbury, United Kingdom.

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Compliant with
Medical Device Directive
93/42/EEC

For clinical use in the US FDA 510(k) K093520 applies:

- VivoSight is a Multi-Beam Optical Coherence Tomography (OCT) system indicated for use in the two-dimensional, cross-sectional, real-time imaging of external tissues of the human body. This indicated use allows imaging of tissue microstructure, including skin, to aid trained and competent clinicians in their assessment of a patient's clinical conditions.
- US Federal law restricts this device to sale by or on the order of a physician.



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