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Tissue Optics and Microcirculation Imaging

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The group uses a fundamental understanding of tissue optics and techniques including Laser Doppler, Laser Speckle, TiVi, Optical Coherence Tomography and Photoacoustic Imaging to investigate and image the microcirculation. This has been applied to psoriasis, wound healing, diabetes, cancer, coronary artery disease and UV dose response studies. Structural and functional imaging of the microcirculation is necessary to understand many diseases such as diabetes mellitus, heart disease, peripheral vascular disease and arteriosclerosis [1]. We have developed several methods for assessment of both the structural and dynamic properties of the capillaries in the upper dermis and the vessels which supply them [1-5].

![Figure 1](image1)

**Figure 1.** Imaging the microcirculation i) TiVi, ii) cmOCT of the nailfold plexus, iii) 3D cmOCT on the fingertip with structure and iv) 3D photoacoustic and ultrasound imaging of the volar aspect of human wrist.

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