developments aim to improve the SNR in the flow maps, detect and possibly reduce motion artifacts and to cover a larger field of view. Improvements in the available laser power and further improvements in the photo-sensitivity of high-speed CMOS sensors will support these targets. Meanwhile, handling the instrument like a photo or video camera allows the rapid and interactive assessment of blood perfusion over extended areas of the body by sequentially observing different locations.

Across the selected case studies, LDI was used to visualize vascularization and to monitor blood flow in small animals and in clinical studies. These initial results of LDI blood flow monitoring over large areas in real-time indicate clinical applications with unforeseeable potential. Disturbances in perfusion in general or alterations in blood flow dynamics point to dysfunctions of the affected tissue or the microcirculation. For instance, live observation of the perfusion changes due to the cardiac cycle enables the extraction of additional parameters such as the dynamic range, e.g. peak-to-peak amplitude. LDI blood flow monitoring complements optical coherence tomography (OCT) or photo-acoustic tomography (PAT) imaging of vascularization and blood flow. However, OCT and PAT operate over smaller areas with a shorter working distance than LDI but with a three-dimensional imaging of vascularization and blood flow. We are convinced that real-time full field perfusion imaging improves the assessment of health issues related to microcirculation due to its simplicity and intuitive interpretation.

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