

Introduction to Biomedical Optical Imaging Issue

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This special issue on Biomedical Optical Imaging contains 10 papers that use novel optical imaging technologies for preclinical and clinical applications. In the Optical Coherence Tomography (OCT) section, Swaan et al. demonstrated the needle-based OCT imaging of the prostate *in vivo*. The authors found that needle-based OCT is feasible and safe and can visualize different prostatic tissue types. For urinary tract imaging, Freund et al. investigated the relationship between the OCT signal attenuation coefficient and histopathologic tumor grade. The attenuation coefficient was shown to be promising for providing high sensitivity and specificity in the diagnosis of high-grade urothelial carcinoma. Ekelem et al. studied effects of melanin density on OCT image quality. Interestingly, blinded rater assessment results were independent of OCT image quality, suggesting that OCT may be useful over a wide skin tone spectrum. Pham et al. tested six OCT systems with different wavelengths and configurations for imaging porcine vocal folds. The authors compared imaging performance using a quantitative image analysis method.

Four papers on reflectance confocal microscopy (RCM) and its use in various clinical applications are also included. Jo et al. used an RCM device to compare the melanolysis effectiveness of two different treatment laser options. Results show that RCM can be used to assess melanin deposition before and after treatment. Fuchs et al.

utilized both RCM and OCT to non-invasively visualize gold microparticle delivery and photothermal effects during treatment of acne vulgaris, which may enable bedside monitoring during the treatment. Peterson et al. demonstrated video-mosaicking of RCM images to examine large areas of oral mucosa. The authors were able to increase the field size to several millimeters. Kang et al. developed a miniaturized RCM endoscopy capsule and demonstrated imaging of the large regions of the human esophagus *in vivo*.

Two papers on other optical imaging technologies are also incorporated in this special issue. Zhou et al. developed a miniature scanning fiber endoscope for multispectral near-infrared imaging for dental applications. The authors found that occlusal lesions and interproximal lesions can be revealed with this new endoscopy device. Sowers et al. investigated cumulative fluence safety levels for intravascular photoacoustic imaging of various cell types *in vitro*. This study may provide a groundwork for strategizing safe fluence during *in vivo* human imaging.

We thank the authors and reviewers who contributed in this issue. As always, we welcome manuscripts on new technology development and early-stage preclinical and clinical adaptations. Our goal is to bridge the gap between the clinical and engineering communities. We hope that this special edition is a useful step in this direction.

Conflict of Interest Disclosures: All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.

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Accepted 23 April 2019

Published online 2019 in Wiley Online Library
(wileyonlinelibrary.com).

DOI 10.1002/lsm.23100