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**Handheld optical coherence tomography-reflectance confocal microscopy probe for detection of basal cell carcinoma and delineation of margins.**

*Iftimia N, Yélamos O, Chen CJ, Maguluri G, Cordova MA, Sahu A, Park J, Fox W, Alessi-Fox C, Rajadhyaksha M. J Biomed Opt. 2017 Jul 1;22(7):76006. doi: 10.1117/1.JBO.22.7.076006.*

### **ABSTRACT**

We present a hand-held implementation and preliminary evaluation of a combined optical coherence tomography (OCT) and reflectanceconfocal microscopy (RCM) probe for detecting and delineating the margins of basal cell carcinomas (BCCs) in human skin *in vivo*. A standard OCT approach (spectrometer-based) with a central wavelength of 1310 nm and 0.11 numerical aperture (NA) was combined with a standard RCM approach (830-nm wavelength and 0.9 NA) into a common path hand-held probe. Cross-sectional OCT images and enface RCM images are simultaneously displayed, allowing for three-dimensional microscopic assessment of tumor morphology in real time. Depending on the subtype and depth of the BCC tumor and surrounding skin conditions, OCT and RCM imaging are able to complement each other, the strengths of each helping overcome the limitations of the other. Four representative cases are summarized, out of the 15 investigated in a preliminary pilot study, demonstrating how OCT and RCM imaging may be synergistically combined to more accurately detect BCCs and more completely delineate margins. Our preliminary results highlight the potential benefits of combining the two technologies within a single probe to potentially guide diagnosis as well as treatment of BCCs. PMID: 28697233 DOI: 10.1117/1.JBO.22.7.076006