MULTIPHOTON IMAGING OF SKIN CANCER: A FOCUS ON BASAL CELL CARCINOMA

R. Cicchi, P. Carli, D. Massi, S. Sestini, D. Stambouli, and F. S. Pavone

1 European Laboratory for Non-Linear Spectroscopy (LENS), Via N. Carrara 1, 50019 Sesto Fiorentino (Florence), Italy
2 Department of Dermatology, University of Florence, Via della Pergola 58, 50121, Florence, Italy
3 Department of Human Pathology and Oncology, University of Florence, G.B. Morgagni 85, 50134 Florence, Italy
4 Department of Physics, University of Florence, G. Sansone 1, 50019 Sesto Fiorentino (Florence) Italy

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1. ABSTRACT

We will present measurements performed on ex-vivo human skin samples showing Basal Cell Carcinoma. Recording were obtained with a custom built Multiphoton Microscope. Our aim was to evaluate the morphology of BCC using two-photon fluorescence excitation and to establish a correlation with histopathology examination. The sample imaging was performed with a two photon laser scanning fluorescence microscope on endogenous tissue fluorescence within 2-3 hours from the excision, and compared with histopathological examination (see for example fig. 1a & b). The acquired images allowed an obvious discrimination of the neoplastic areas toward normal tissue, based on morphological differences. Our results showed that BCC tissue has a more homogeneous structure in comparison to normal tissue as well as a higher fluorescent response. Our suggested method may represent a new diagnostic tool that improves the diagnostic accuracy of clinical examination alone, enabling the accurate discrimination of basal cell carcinoma from normal tissue. Also, perspectives towards in-vivo applications will be discussed.

Figure 1: a) TPE and b) histopathological imaging of a human skin tissue sample of BCC excised during dermatological surgery procedures. Tumor, dermis and epidermis region are visible.