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### Identification of ex-vivo confocal scanning microscopic features and their histological correlates in human skin.

Hartmann D, Ruini C, Mathemeier L, Dietrich A, Ruzicka T, von Braunmühl T. *J Biophotonics*. 2015 May 21. doi: 10.1002/jbio.201500124.

#### **ABSTRACT**

Ex-vivo confocal laser scanning microscopy (CLSM) is an emerging diagnostic tool allowing fast and easy microscopic tissue examination. The first generation of ex-vivo devices have already shown promising results in the ex-vivo evaluation of basal cell carcinoma compared to Mohs surgery. Nevertheless, for the diagnostics of pathological skin lesions the knowledge of normal skin features is essential. Therefore we examined 50 samples of healthy skin from various donor sites including head and neck (n = 25), trunk (n = 10), upper (n = 10) and lower extremities (n = 5) using a new generation ex-vivo CLSM device offering three different laser wavelengths and compared the findings to the corresponding histological sections. In correlation with the histopathology we identified different layers of the epidermis, differentiated keratinocytes from melanocytes and described in detail skin appendages including hair follicle, sebaceous and sweat glands. Furthermore, structures of the dermis and subcutis were illustrated. Additionally, artefacts and pitfalls occurring with the use of ex-vivo CLSM have been documented. The study offers an overview of the main ex-vivo CLSM skin characteristics in comparison to the standard histological examination and helps to recognize and avoid common artefacts. Anatomy of a hair follicle in the reflectance mode (RM) CLSM, fluorescence mode (FM) CLSM and in a routine hematoxylin-eosin stained histological section (H).