

MULTIMODALITY CONFOCAL IMAGING AND ITS APPLICATION IN REVEALING BIOMEDICAL HISTOPATHOLOGY

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Confocal scanning laser microscopy imaging is a very successful means that has greatly impacted dermatological diagnosis and research. However, up to now most researchers have focused on either reflectance or fluorescence confocal imaging separately which can only provide us either structural or pathological information of tissue. This greatly affected the accuracy of dermatological diagnosis by lack of enough diagnostic information [1].

In order to improve diagnostic performance of dermatosis efficiently, we developed a noninvasive simultaneously acquired dual-mode reflectance and fluorescence confocal microscope. The dual-mode confocal microscope has light sources at 375nm used for fluorescence imaging for autofluorescence substance nicotinamide adenine dinucleotide (NADH) and flavin adenine dinucleotide (FAD) [2], and 830 nm applied for reflectance imaging. The system has a frame rate of 1 frame per second with 512x512 pixel size, and a maximum field-of-view of $250 \times 250 \mu\text{m}$ for 40x NA 1.3 oil-immersion objective.

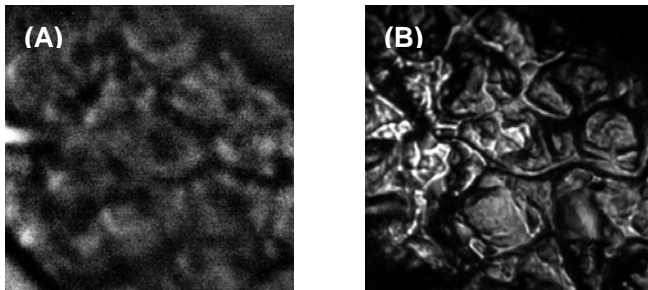


Figure1: In vivo imaging of mouse ear skin.
(A) fluorescence imaging; (B) reflectance imaging.

Figure1 shows a fluorescence image and a reflectance image of mouse ear skin which were acquired at the same time. The fluorescence image mainly indicates the content of autofluorescence substance NADH in skin cells and the reflectance image denotes us the corresponding structural information.

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