

# IN VIVO SPECTROPHOTOMETRIC EVALUATION OF SKIN TUMOURS USING A NEW SKIN CHROMOPHORE IMAGING SYSTEM (SIAScope)

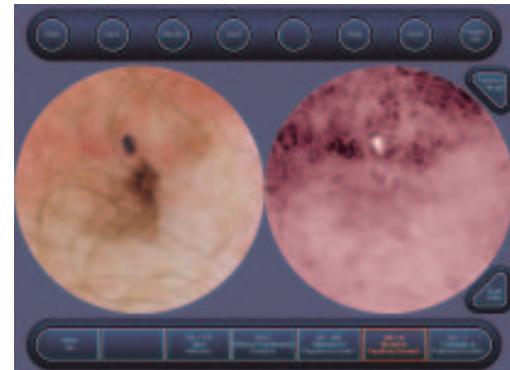
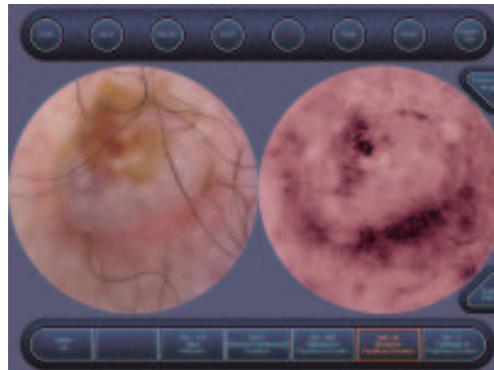
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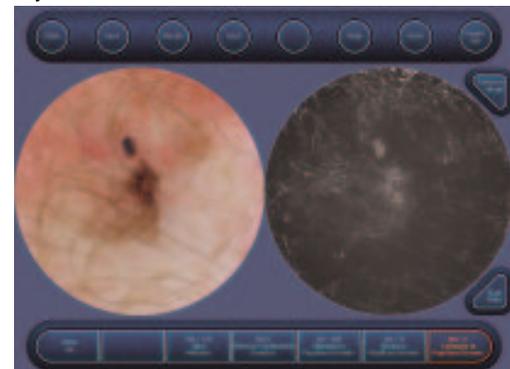
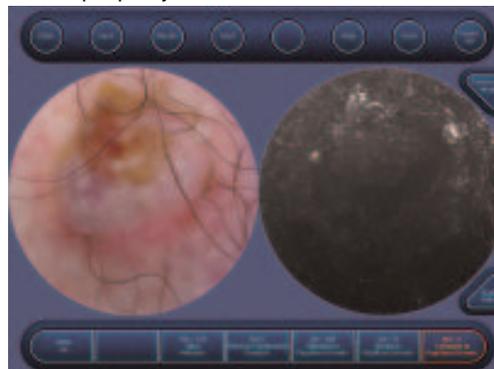
## Basal Cell Carcinoma

## Melanoma



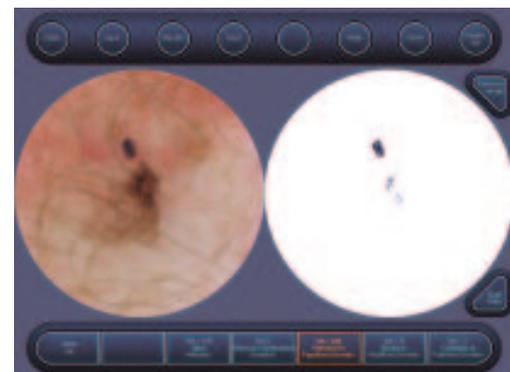
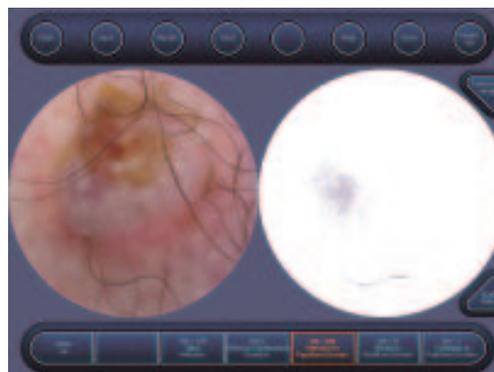
SIAGraph: Blood in papillary dermis  
Note characteristic concentration of blood vessels around periphery.

SIAGraph: Blood in papillary dermis  
Note characteristic displacement of blood with erythematous bluish.



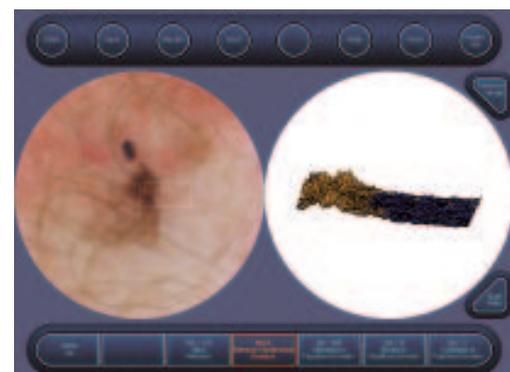
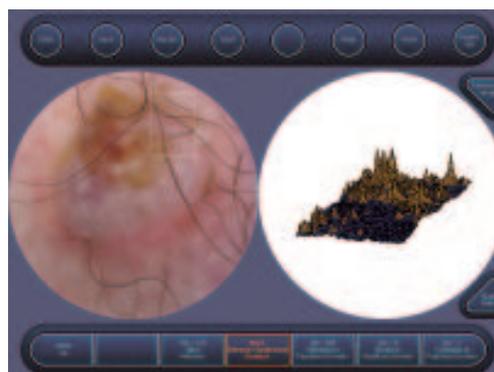
SIAGraph: Collagen in papillary dermis (White = more)  
Note smoothing of collagen in centre of lesion.

SIAGraph: Collagen in papillary dermis (White = more)  
Note fibrosis in centre of lesion.



SIAGraph: Melanin in papillary dermis (blue).  
Note the area of melanin in papillary dermis. This is a pigmented infiltrative basal cell carcinoma.

SIAGraph: Melanin in papillary dermis (blue).  
Note the area of melanin in papillary dermis, characteristic of invasive melanoma.



SIAGraph: Contours of dermal - epidermal junction.  
Note smoothing of centre of lesion compared to surrounding tissue (Carter's sign).

SIAGraph: Contours of dermal - epidermal junction.  
Note increasing unevenness on approach to lesion.

### ABSTRACT:

Computerized skin diascopy combined with a two-dimensional in-vivo reflectance spectrophotometer (400 nm to 1000 nm) and advanced computer algorithms allow visualization of the distribution of:  
1: collagen patterns in the papillary dermis,  
2: melanin,  
3: dermal melanin,  
4: vessel distribution in the upper skin layers,  
5: topography of the epidermal-dermal junction.

This technique was used for the analysis of skin lesions histologically exhibiting features of basal cell carcinomas but which clinically were suspected to be malignant melanomas. Nodular lesions showed a characteristic concentration of perilesional blood vessels combined with a slight central fibrosis, which in some lesions had a distinct micro-nodular pattern. The epidermal-dermal junction was irregular within the entire lesion except for lesions with marked cicatricial atrophy (basalioma planum cicatricans). Pigmented basaliomas contained melanin mainly in the epidermis and to a lesser degree in the deeper (dermal) layers, and did not show erosions of the dermal collagen specific for malignant melanomas.

### CONCLUSION:

This new non-invasive technique provides additional information on the morphology of skin lesions. A series of skin lesions, e.g. basal cell carcinomas exhibit characteristic reflectance spectrographic features, which may be utilized to increase the diagnostic in-vivo accuracy in dermatology.

Diagnostic significance of features shown is discussed in "CLINICAL APPLICATION OF SPECTROPHOTOMETRIC INTRACUTANEOUS ANALYSIS" poster.