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Portable Device for Non-contact Early Diagnostics of Skin Cancer

European development fund project #1.1.1.1/16/A/197

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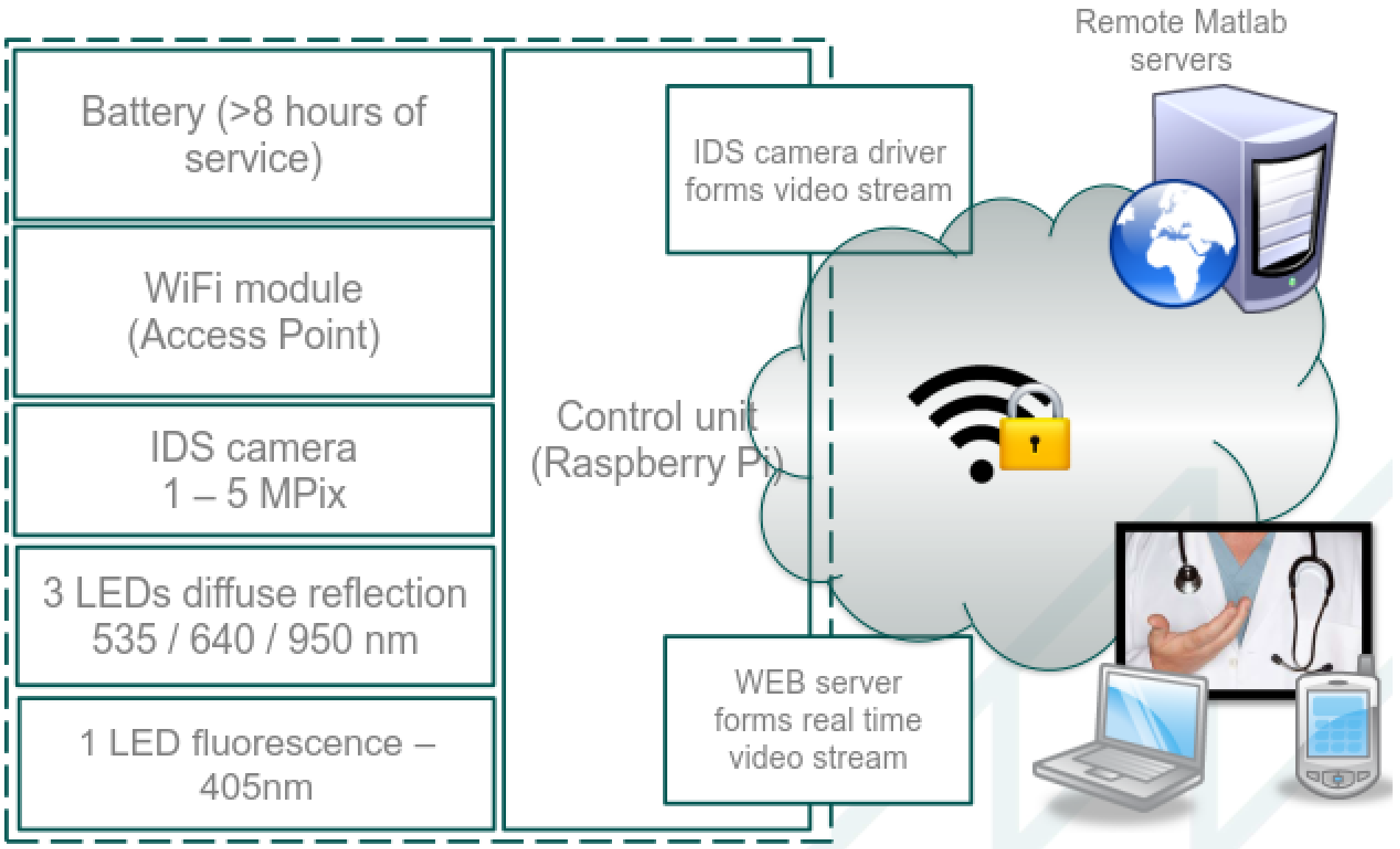
NACIONĀLAIS ATTĪSTĪBAS PLĀNS 2020

EIROPAS SAVIENĪBA
Eiropas Reģionālās attīstības fonds

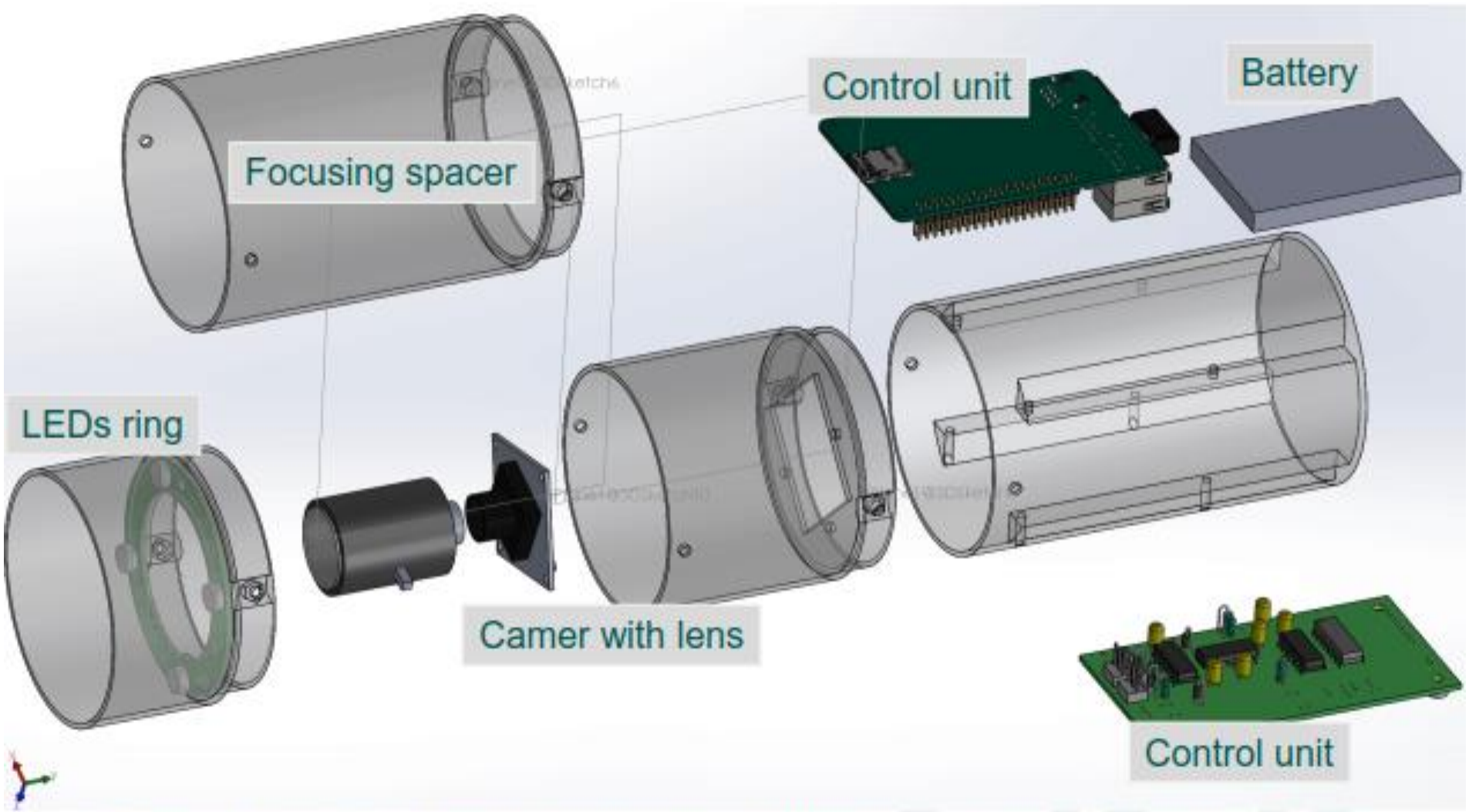
IEGULDĪJUMS TAVĀ NĀKOTNĒ

Main components of the proposed portable device and cloud data processing



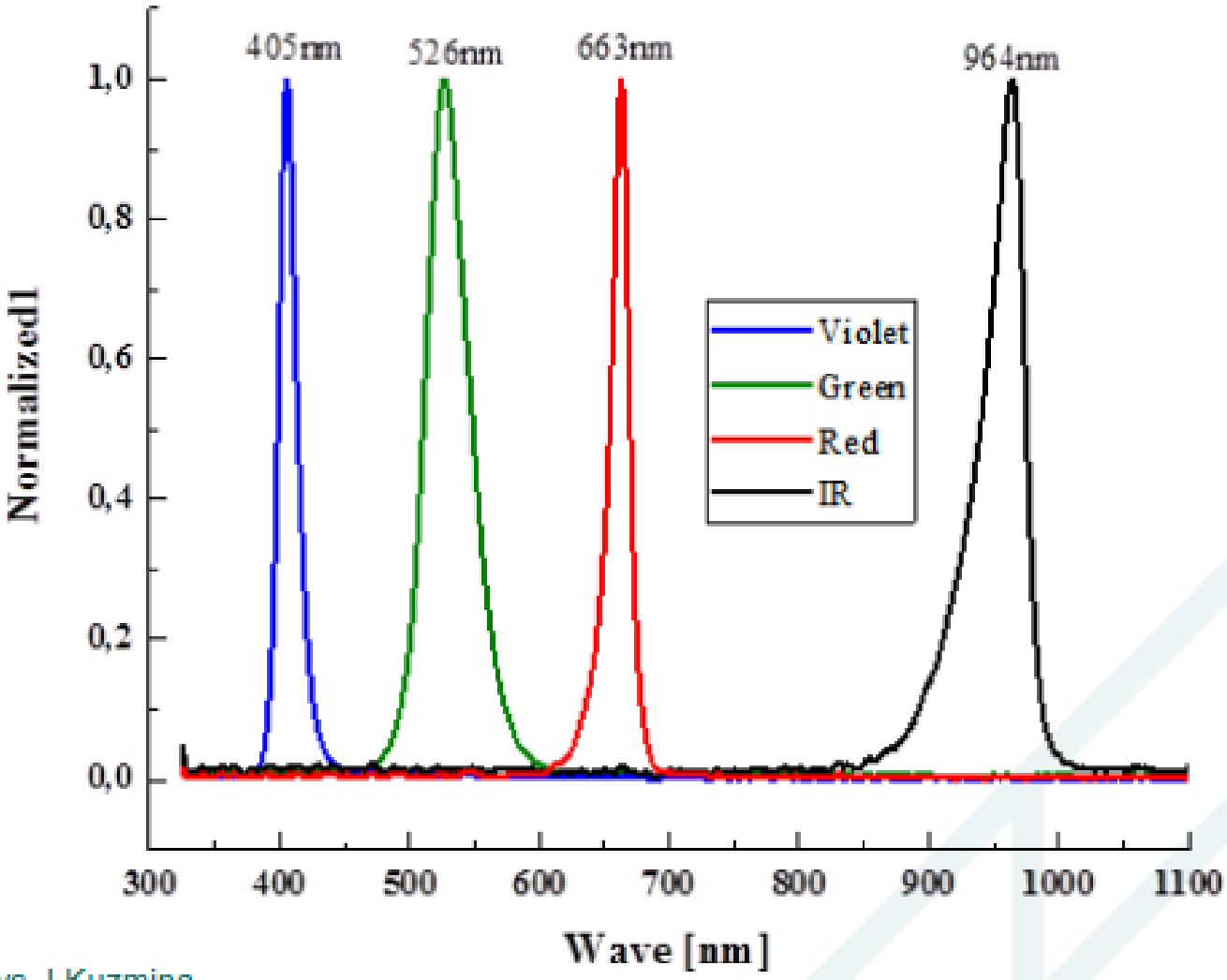
D.Bļizņuks, D.Jakovels, I.Saknite, J.Spigulis "Mobile platform for online processing of multimodal skin optical images"

Modules of the portable device



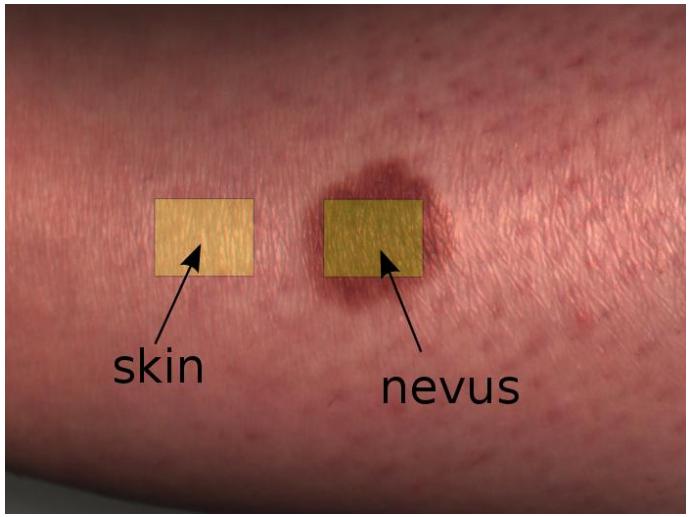
D.Bļizņuks, D.Jakovels, I.Saknite, J.Spigulis "Mobile platform for online processing of multimodal skin optical images"

Spectral characteristics of used light sources



*Dr.phys. I.Kuzmina

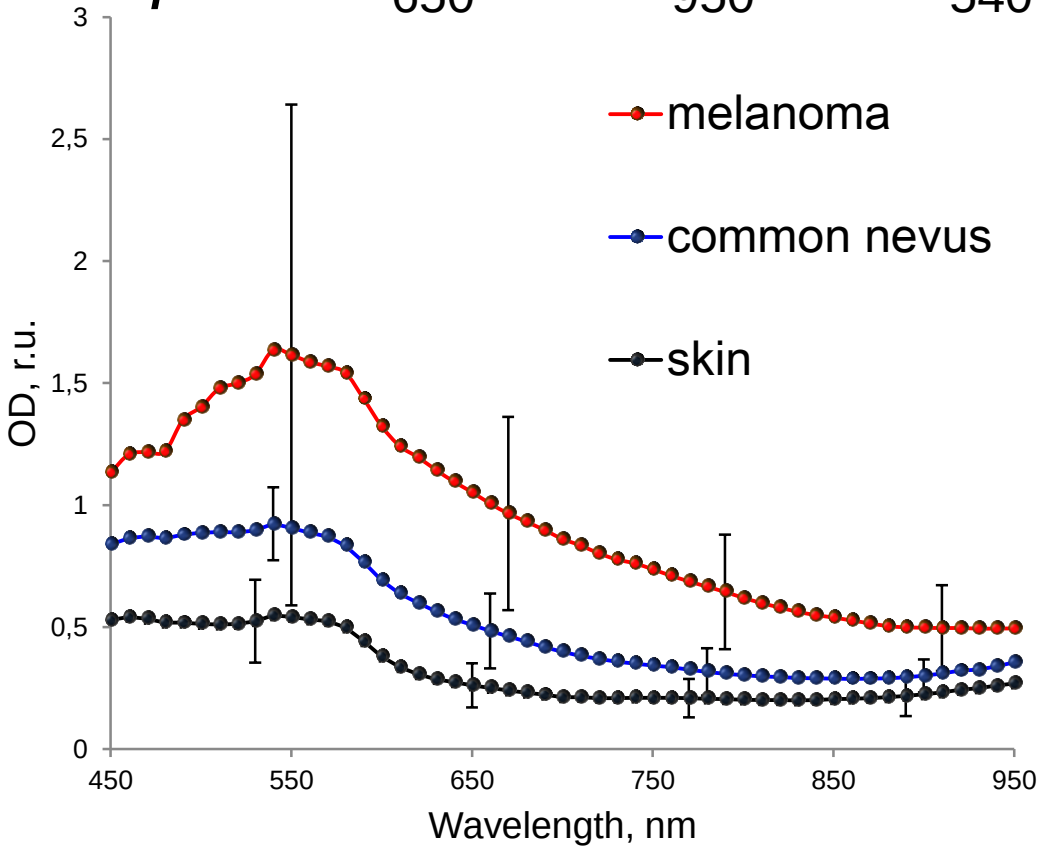
*Melanoma diagnostics parameter – processing of narrow band reflectance images



17 melanomas
65 nevi
82 healthy skin

Melanoma index:

$p = OD_{650} + OD_{950} - OD_{540}$



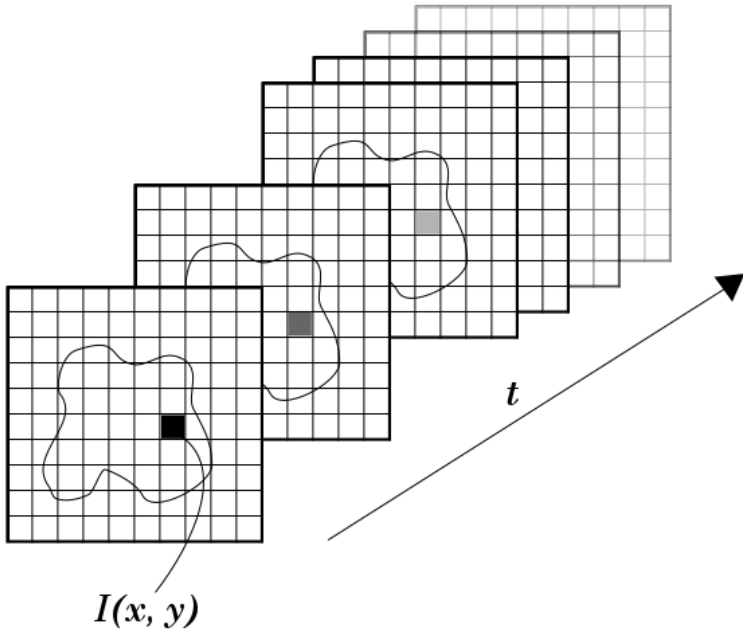
*Ilze Diebele et al., "Clinical evaluation of melanomas and common nevi by spectral imaging," Biomed. Opt. Express 3, 467-472 (2012)

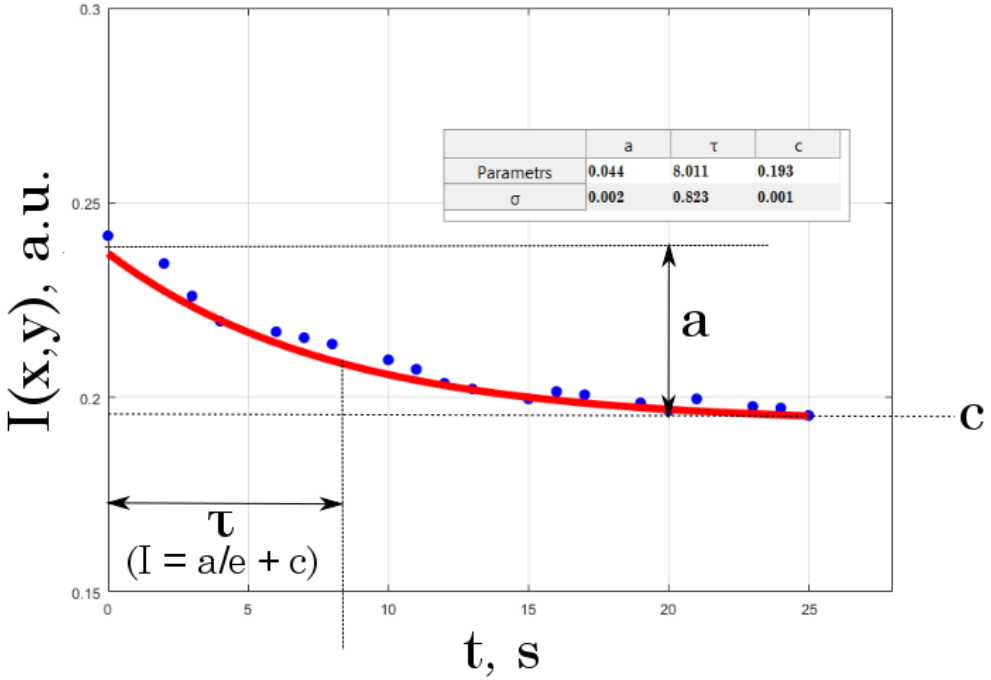
*Analysis of LED excited autofluorescence images

Model: $I = a \cdot e^{\left(-\frac{t}{\tau}\right)} + c$

c – backgroung component

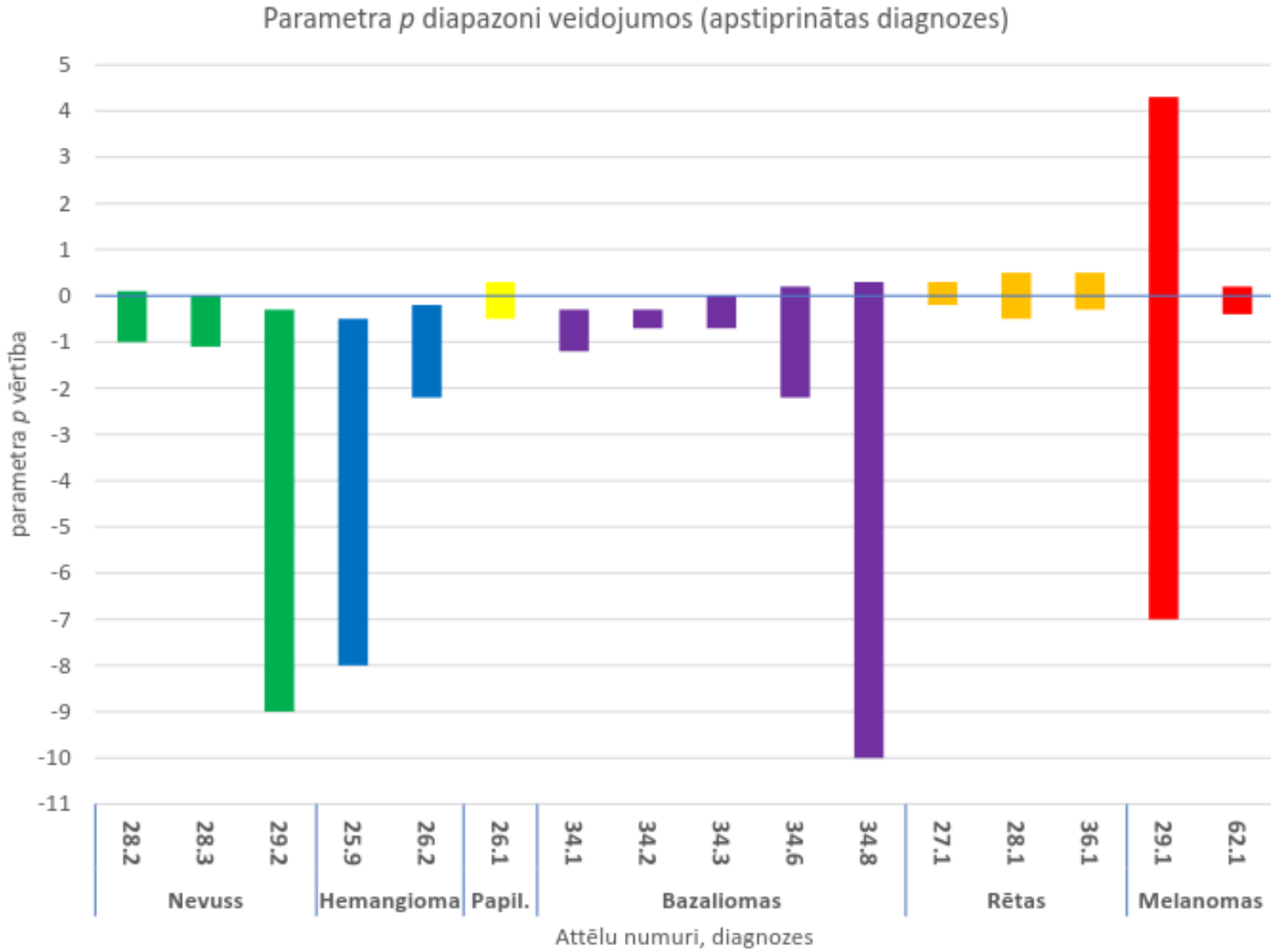
τ – bleaching rate





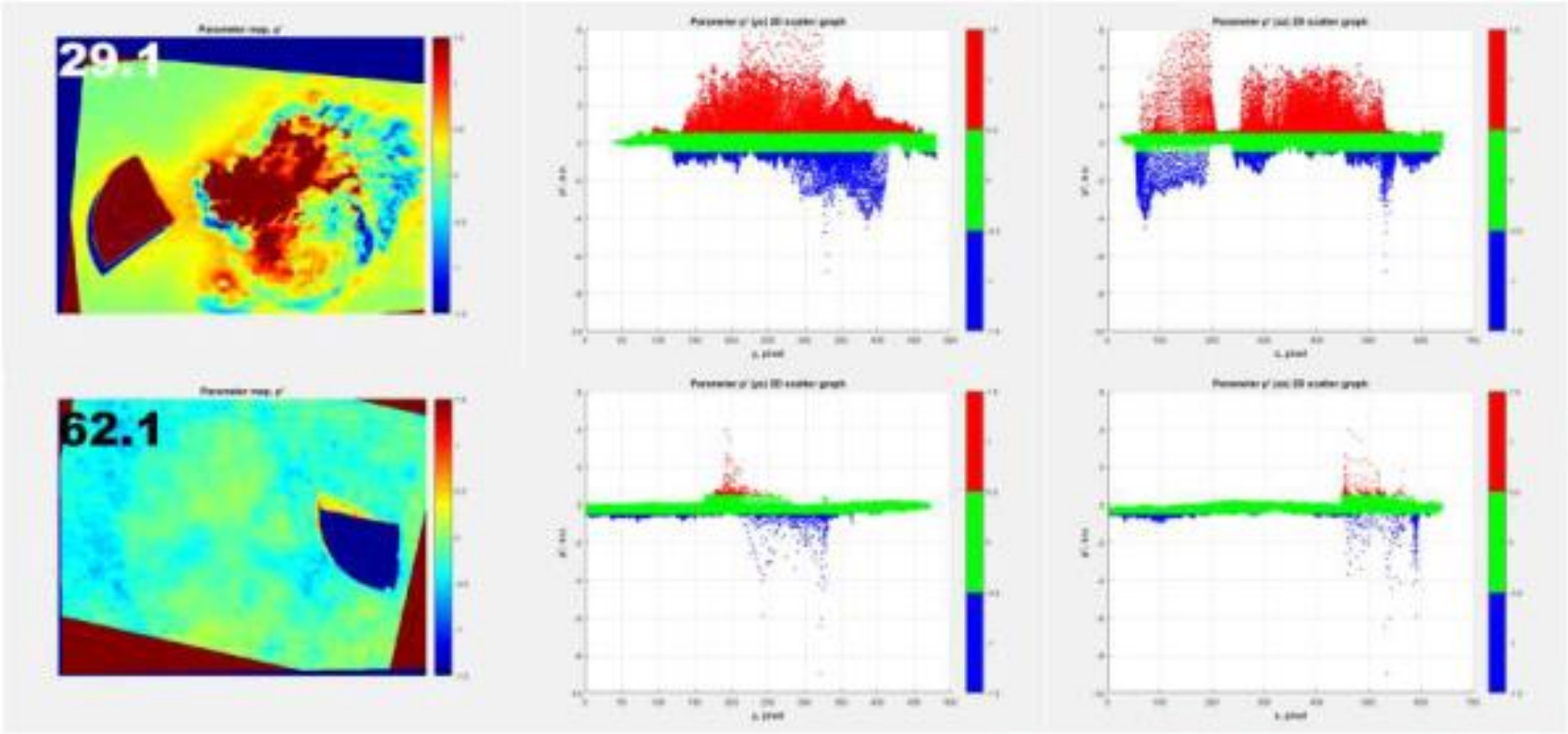
*PhD Aleksejs Lihacovs: doi: 10.1117/1.JBO.20.12.120502

*Value range of melanoma diagnostics parameter: analysis of multispectral reflectance images



*PhD Katrina Bolocko & Ilze Lihacova

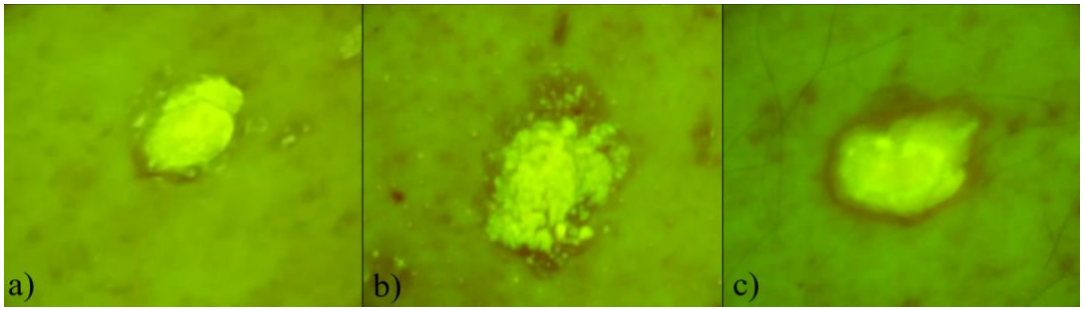
*Diagnostics parameter maps of malignant melanoma



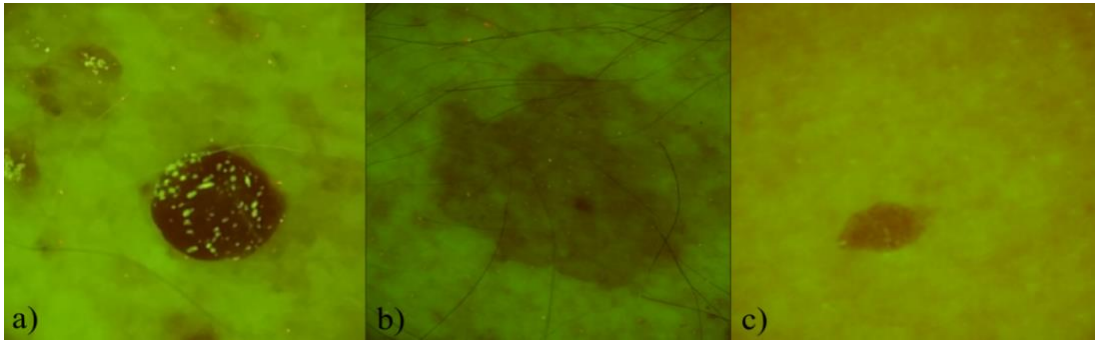
*PhD Katrina Bolocko & Ilze Lihacova

Autofluorescence images of different skin lesions under 405 nm LED excitation

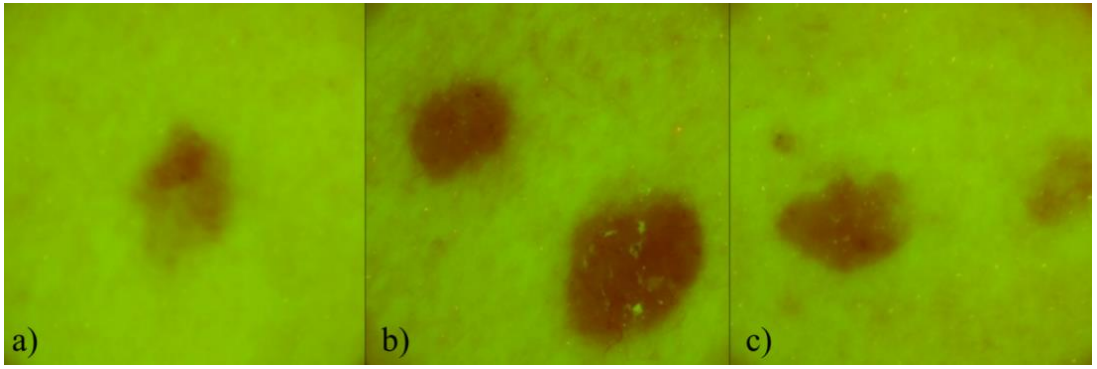
SK



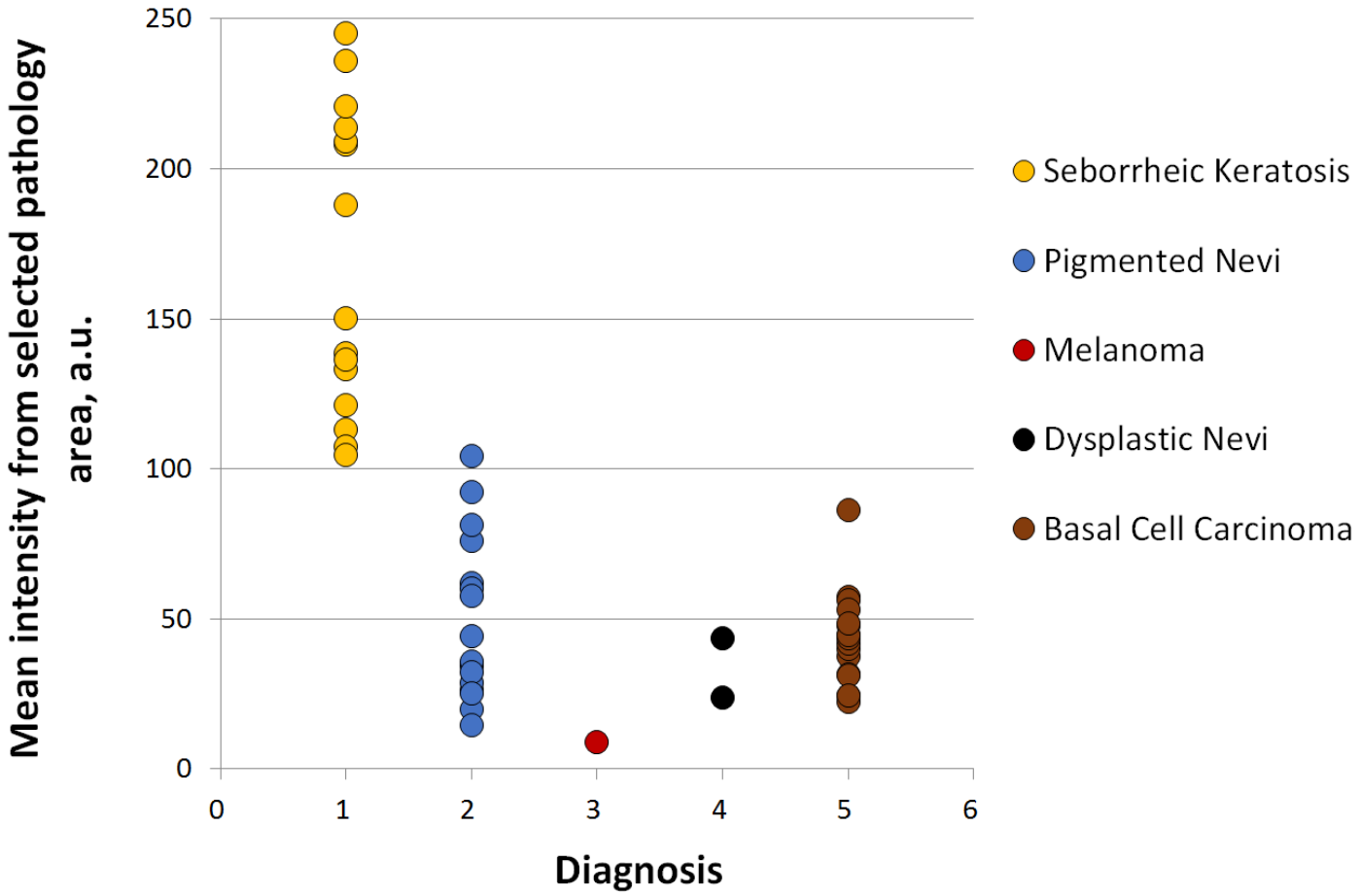
Pigmented Nevi



BCC



*Autofluorescence mean values for different skin lesions (405 nm LED excitation)



*Aleksejs Lihacovs, Ilze Lihacova and Emilija Vija Plorina

Future work

- Enhancement of image quality of reflectance and fluorescence images
- Image stabilization for processing of AF time series images.
- Development of multimodal approach and validation of diagnostics parameters
- Calibration of proposed method for evaluation of diagnostics threshold.
- More clinical data are required.

Thank you!

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