

**FORMALINE-INDUCED FLUORESCENCE (FIF) AS AN AUXILIARY
TOOL FOR THE HISTOPATHOLOGICAL DIAGNOSIS OF HUMAN
CUTANEOUS MELANOMA**

NATALIA SYPNIEWSKA, EWA BARCIKOWSKA
and BARBARA W. CHWIROT

Department of Medical Biology, Institute of General and Molecular Biology,
Nicholas Copernicus University, Gagarina 9, UMK Toruń, Poland

The incidence of melanoma has been rapidly increasing worldwide, with an average doubling time of 10 years. Early detection and surgical removal of melanoma are of crucial importance for the survival of the patient. There are no objective clinical criteria ensuring clinical diagnosis. Also, the histological features of melanoma cannot be defined unequivocally, and thus there is a clear need for auxiliary methods for histopathologically diagnosing melanoma. Formaldehyde induced fluorescence (FIF) was firstly described in 1950. A fully objective, quantitative measurement of the intensities of the FIF of pigmented lesions of human skin were carried out only recently. The authors obtained a high sensitivity and specificity of differentiation between melanoma and other pigmented skin lesions, 74% and 58%, respectively. The aim of this study was to supplement our earlier data with results obtained for a new set of melanomas and other skin lesions and to optimise the algorithm used for detecting melanoma cells in standard histopathological sections. The material for the study was formaline-fixed paraffin-embedded specimens comprising cutaneous melanomas (n=24), benign pigmented lesions (n=30) and seborrhoeic keratoses (n=5). Digital images of the fluorescence allowing for a determination of the FIF intensities were recorded at two combinations of the excitation and emission bands: $\lambda_{ex}=366$ nm, $\lambda_{em}>425$ nm and $\lambda_{ex}=450-480$ nm, $\lambda_{em}>515$ nm. The results demonstrate that using the approach based on a quantitative determination of the FIF intensity, it is possible to differentiate between melanomas and other skin lesions with a sensitivity of 91.7% and a specificity of 65.7%. Thus, quantitative measurements of the fluorescence of pigmented skin lesions fixed with formalin and embedded in paraffin, as for standard histological examinations, can be a useful auxiliary tool for detecting human cutaneous melanoma.